

V CORPS

**AVIATION TRAINING
AND
STANDARDIZATION
SOP**



DEPARTMENT OF THE ARMY
HEADQUARTERS V CORPS
UNIT 29355
APO AE 09014

AETV-AV

29 November 2000

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Change 2 to V Corps Training and Standardization Standing Operating Procedures (SOP) dated 23 July 1996.

1. This change adds Enclosure 1, CH-47 Extended Range Fuel System (ERFS) operations to Appendix 1 for UH-60/AH-64 ERFS operations. The change replaces Appendix 2 (Risk Assessment), Appendix 4 (Terrain Flight Planning), Appendix 5 (Paradrop Operations), Appendix 6 (Rapelling Operations), Appendix 9 (Fighter Management), and Appendix 10 (Helicopter Flight Coordination Area). The change also removes the old Appendix 7 (STABO) entirely and replaces it with Appendix 7 (FRIES Operations).

2. Insert new appendices and enclosures as indicated below:

- a. Remove old page G-1 and insert new page G-1.
- b. Insert Enclosure 1 (CH-47D ERFS Operations) to Appendix 1 (UH-60/AH-64 Extended Range Fuel System Operations).
- c. Remove all of Appendix 2 (Risk Assessment) and replace with new Appendix 2 (Risk Assessment).
- d. Remove all of Appendix 4 (Terrain Flight Planning) and replace with new Appendix 4 (Terrain Flight Planning).
- e. Remove all of Appendix 5 (Paradrop Operations) and replace with new Appendix 5 (Paradrop Operations).
- f. Remove all of Appendix 6 (FRIES Operations) and replace with new Appendix 6 Rapelling Operations).
- g. Remove all of Appendix 7 (STABO Operations) and replace with new Appendix 7 (Fries Operations).
- h. Remove all of Appendix 9 (Fighter Management) and replace with new Appendix 9 (Fighter Management).

AETV-AV

SUBJECT: Change 2 to V Corps Training and Standardization Standing Operating Procedures (SOP) dated 23 July 1996.

- i. Remove all of Appendix 10 (Helicopter Flight Coordination Area) and replace with new Appendix 10 (Helicopter Flight Coordination Area).
 - j. A vertical bar found in the left margin annotates changes.
 - k. Insert this change memorandum in front of page G-1.
3. The V Corps point of contact is the CASSD Standardization Chief, DSN 322-7883.

/// ORIGINAL SIGNED ///

SCOTT B. THOMPSON
LTC, AV
Chief, G-3 Aviation

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DEPARTMENT OF THE ARMY
HEADQUARTERS V CORPS
UNIT 29355
APO AE 09014

AETV-AV

4 December 1998

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Change 1 to V Corps Training and Standardization Standing Operating Procedures (SOP) dated 23 July 1996.

1. This change updates Appendix 1 for UH-60/AH-64 Extended Range Fuel System Operations, adds a fighter management policy, and supersedes the V Corps Helicopter Flight Coordination Area SOP by incorporating an update to that document as an annex to this SOP.

2. Make "pen and ink" changes and insert new appendices as indicated below:

a. On page G-1 paragraph 5, line through "AUXILARY TANK OPERATIONS" and replace with "UH-60/AH-64 Extended Range Fuel System Operations".

b. On page G-1 at the bottom of paragraph 5 write in:

APP 9 - FIGHTER ANAGEMENT.....G-9-1

APP 10 - HELICOPTER FLIGHT COORDINATION AREA.....G-10-1

c. Remove all of Appendix 1 (AUXILARY TANK OPERATIONS) and replace with new Appendix 1 (UH-60/AH-64 Extended Range Fuel System Operations).

d. On Appendix 2 ENCLOSURE 1, RISK ASSESMENT MATRIX, block 4 titled ADDITIONAL FACTORS, next to "AUX FUEL OPS" add three asterisks (***). On the same page under ** AUTOMATIC HIGH RISK MISSION add the following:
*** AUTOMATIC HIGH RISK MISSION. MAY BE REDUCED TO NO LOWER THAN A MEDIUM RISK IAW APP 1.

e. Insert new Appendix 9 (Fighter Management).

f. Insert new Appendix 10 (Helicopter Flight Coordination Area).

g. Insert this change memorandum in front of page G-1.

AETV-AV

SUBJECT: Change 1 to V Corps Training and Standardization Standing Operating Procedures (SOP) dated 23 July 1996.

3. The V Corps point of contact is the CASSD Standards Officer, DSN 322-7883.

/// ORIGINAL SIGNED ///

GREGORY A. ADAMS
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DEPARTMENT OF THE ARMY
HEADQUARTERS V CORPS
UNIT 29355
APO AE 09014

AETV-DC


23 July 1996

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: V Corps Training and Standardization Standing Operating Procedures (SOP)

1. The V Corps Training and Standardization SOP was developed to standardize procedures among V Corps aviation units, promote safety and enhance operational effectiveness.
2. V Corps units will implement the SOP into their training upon receipt. Copies are provided to non-V Corps units as a courtesy.
- 3 V corps point of contact is the CASSD Standardization Officer, DSN 322-7883.

Encl


WALTER H. YATES
Major General, USA
Deputy Commanding General

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ANNEX G (Training and Standardization - External) to the CASSD
SOP

1. PURPOSE: To outline individual responsibilities during aviation training and furnish standardized procedures to enhance safety during flight operations. To provide instruction and guidance for the conduct of tactical operations, and to comply with Army Safety and Standardization programs.

2. SCOPE: This SOP is intended to standardize aviation procedures for units assigned, attached, or augmented to V Corps.

3. COMBAT/HOSTILE FIRE ZONE OPERATIONS: This SOP was written to promote safe operations in a simulated combat environment and during peacetime operations. During combat/hostile fire zone operations, most of the SOP will still apply. However, no portion of this annex should limit sound tactical combat decisions.

4. GENERAL: Recommendations for changes, additions or deletions to this annex should be directed to:

Commander, CASSD
ATTN: Standardization Officer
Unit 20101
APO AE 09165

5. APPENDICES: The following appendices are included in this annex:

ANNEX G	- TRAINING & STANDARDIZATION - EXTERNAL	G-1
APP 1	- UH-60/AH-64/CH-47 EXTENDED RANGE FUEL SYSTEM OPERATIONS	G-1-1
APP 2	- RISK ASSESSMENT	G-2-1
APP 3	- MULTI-AIRCRAFT OPERATIONS	G-3-1
APP 4	- TERRAIN FLIGHT PLANNING	G-4-1
APP 5	- PARADROP OPERATIONS	G-5-1
APP 6	- RAPPELLING OPERATIONS	G-6-1
APP 7	- FRIES OPERATIONS	G-7-1
APP 8	- HELO-CAST & RECOVERY OPERATIONS	G-8-1
APP 9	- FIGHTER MANAGEMENT	G-8-1
APP 10	- HELICOPTER FLIGHT COORDINATION AREA	G-8-1

1. REFERENCES:

- a. Aircraft Operator's Manuals
- b. Aircrew Training Manuals
- c. ERFS SOF UH-60/AH-64 98-01
- d. CASSD AH-64 Auxiliary Tank POI

2. PURPOSE: To standardize procedures that ensure compliance with regulatory guidance and enhance safety during training and operational Extended Range Fuel System (ERFS) missions within the USAREUR theater.

3. GENERAL: Procedures prescribed herein apply only when the ERFS contains useable fuel. Fueled ERFS will not be used as a matter of convenience for routine, daily operations. It shall only be used for METL-based qualification and sustainment training, or for operational missions whose parameters (flight time and availability of fuel) leave no other reasonable alternative. Aircraft with fueled ERFS shall carry only the mission essential crew and passengers. The entire crew must be ERFS qualified.

4. RESPONSIBILITIES:

a. Commanders will:

- (1) Evaluate operational missions requiring ERFS.
- (2) Define the specific mission profiles permitting ERFS use.
- (3) Apply risk criteria in this SOP when establishing ERFS mission profiles.
- (4) Establish an SOP defining the specific mission profiles permitting its use.
- (5) Manage risk at the appropriate level for all missions including those with ERFS tanks.

b. Standardization Officers will:

- (1) Implement ERFS qualification, sustainment, and training/evaluation programs.
- (2) Integrate annual ERFS training into the unit academic program.
- (3) Stress aircrew coordination considerations in every facet of ERFS training.
- (4) Document completion of ERFS qualification training on DA Forms 7122-R and 759 closeout.

Appendix 1 (UH-60/AH-64 Extended Range Fuel System Operations) to ANNEX G
(Training and Standardization – External) to the CASSD SOP

c. The Pilot in Command of an aircraft equipped with fueled ERFS tanks will ensure the crew brief is comprehensive and includes the required operational, contingency, and aircrew coordination actions specified in the SOP and checklist.

5. ERFS UNIT SOP must address:

a. Operational mission profiles for ERFS operations approved at the highest level of aviation unit command.

b. ERFS configuration and installation IAW appropriate TMs, ASAMs, and TBs per the 98-01 SOP.

c. Refuel and defuel operations. Hot refuel or defuel operations of ERFS is not authorized.

d. Procedures for obtaining fuel samples from ERFS tanks.

e. Pre-flight and post-flight procedures.

f. The installation, removal, maintenance, and storage of ERFS components.

g. Aircrew qualification, sustainment, and evaluation training programs.

h. Use of the simulation device for operational, emergency, and contingency training.

i. Mission planning criteria: performance planning, weight and balance, degraded flight handling characteristics due to increased gross weight and effect on C.G., and contingency operations.

j. The mission profile will mandate the highest possible altitude commensurate with METT-T and avoidance of built-up areas to the maximum extent possible.

k. Aircrew members for all operational ERFS missions (other than for initial qualification) will be ERFS qualified.

l. Crew brief procedures (with aircrew coordination considerations) for the following:

(1) Fuel transfer procedures. The after take-off check with fueled ERFS will confirm symmetrical transfer (if two or more tanks are installed) without compromising aircraft safety. (Note: To reduce the chance of spill or fire during a crash sequence, the fuel from the ERFS tanks should be transferred to the internal tanks ASAP.)

(2) Emergency procedures, including single engine capabilities and procedures should asymmetrical transfer occur.

- (3) Tank jettison procedures and switchology on take-off and in flight.
- (4) Fire in flight/on the ground and egress procedures.
- (5) Weapon employment parameters.

m. Annual academic program which addresses all of the above topics.

6. SAFETY:

WARNING

The UH-60/AH-64 ERFS is not ballistic tolerant or crashworthy. Its use increases the risk of post crash fire to all aircraft occupants and reduces the maneuverability of the aircraft. This increased risk must be managed at the appropriate level. ERFS will only be used when the mission profile and criticality of its completion outweigh the risks involved. Tanks with no useable fuel still contain approximately 4 gallons. Their pressurization is both ineffective and dangerous during a crash sequence and should be avoided.

- a. Initially, all missions involving ERFS with useable fuel will be considered high risk.
- b. Once all the control measures in the SOP are implemented, the risk briefing may be reduced to, but not lower than, a medium level briefer. All of the following criteria will be complied with before an ERFS mission can be approved:
 - (1) The ERFS mission profile will support a mission essential task approved by the high risk authority and be defined in the unit SOP.
 - (2) Reduction to a medium level briefer is an operational necessity (e.g. split base operations), not a matter of convenience.
 - (3) The ERFS mission briefer will be an aviation officer (O-3 or above). When required by the situation, the intent is for aviation unit commanders to brief ERFS missions when available. But, battalion and brigade operations officers/XOs with company command experience may also brief medium risk ERFS missions when approved by the high or extremely high risk approval authority.
 - (4) Any exceptions/deviations from any control measure elevates the ERFS mission profile to high risk.

Appendix 1 (UH-60/AH-64 Extended Range Fuel System Operations) to ANNEX G
(Training and Standardization – External) to the CASSD SOP

c. The following risk factors will be considered prior to mission approval:

- (1) ERFS tanks are not crashworthy and may permit post-crash spillage and fire.
- (2) ERFS tanks provide limited ballistic tolerance and are not self-sealing.
- (3) Aircraft performance and maneuverability are constrained when ERFS tanks are installed due to increased gross weight, drag, and C.G. shifts.
- (4) Any aircraft specific considerations (e.g. increased weight-induced cracks in AH-64 pylons).

7. ERFS QUALIFICATION and TRAINING REQUIREMENTS for CREWMEMBERS:

a. All units will establish an annual academic program that includes system operation, performance planning, emergency procedures, and the unit SOP. This training will be conducted and documented according to UR 95-1.

b. An annual evaluation will be conducted and documented for rated and nonrated ERFS qualified personnel. The evaluation may be any time during the training year and will include system operation, emergency procedures, emergency egress procedures, and performance planning (rated aviators only).

c. The minimum UH-60 ERFS qualification and training requirements are outlined in this SOP, the Aircrew Training Manual, the Operator's manual and will be augmented by the unit SOP.

d. The AH-64 ERFS qualification and training requirements are not yet published as such, and will be conducted IAW:

- (1) The CASSD, AH-64 Auxiliary Fuel Tank POI, dated March, 1998.
- (2) This SOP augmented by the unit SOP.
- (3) Applicable SOFs and other regulatory messages.

e. When the AH-64, CASSD POI guidance conflicts with subsequent changes to the AH-64 ATM or Operator's manual, then the newer guidance will take precedence.

Enclosure 1 (CH-47D ERFs Operations) to Appendix 1 (UH-60/AH-64 Extended Range Fuel System Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

1. GENERAL: CH-47D flight crews will comply with procedures in paragraphs 2 through 5 of this appendix.

2. RISK ASSESSMENT:

a. All missions involving ERFs with useable fuel will be considered medium risk.

b. The ERFs mission profile will support a mission essential task approved by the medium risk authority and be defined in the unit SOP.

c. The following risk factors will be considered prior to ERFs mission approval:

(1) Fuel leakage into the cabin is possible.

(2) Reduced aircraft performance due to increased gross weight.

(3) Reduced single engine capabilities and expanded height-velocity avoid regions.

(4) Decreased crewmember access to the cabin area making egress and airspace surveillance more difficult. The risk increases with NVD use.

3. ERFs QUALIFICATION AND TRAINING REQUIREMENTS FOR CREWMEMBERS: CH-47D units will establish an annual academic program that includes system operation, performance planning, emergency procedures, and the unit SOP. This training will be conducted and documented according to UR 95-1.

1. REFERENCES:

- a. AR 95-1
- c. AR 385-10
- d. AR 385-95
- e. FM 22-100
- f. FM 100-14
- f. FM 101-5
- g. TC 1-210
- h. Appropriate ATMs

2. PURPOSE: To establish procedures governing the aviation risk assessment and risk management process. Hazards are ever present in military and aviation operations and cannot be completely eliminated. Hazards must be assessed to determine a level of risk and develop effective countermeasures. The objective in V Corps is to manage risk by avoiding, controlling, or eliminating hazards with the primary objective of mission accomplishment.

3. RISK MANAGEMENT:

a. Risk Management is the application of systematic thinking to identify hazards and apply controls to reduce the level of risk making operations more effective. To apply the risk management process the commander must understand two key points.

(1) Hazards exist in every task that our soldiers perform. However, to effectively consider and evaluate hazards they must be assessed a level of risk. This assessment process is an assignment of hazard probability and severity. Once the risk of a hazard has been established it becomes possible to make smart, rational decisions on appropriate options and courses of action.

(2) Once a hazard has been identified and the risk has been assessed, the commander can continue the management process. Knowledge of a hazard, the probability of its occurrence, and the severity of its outcome enables decisions to be made to accept, control, or eliminate the hazard. Control measures can be implemented and a logical mission outcome may be predicted.

b. The Risk Management process consists of three basic principles that commanders must understand and apply:

(1) INTEGRATE RISK MANAGEMENT INTO MISSION PLANNING, PREPARATION, AND EXECUTION: Risk management must be integrated in the planning process from the start. Hazards identification is an ongoing process; early detection gives commanders flexibility

in planning. Those hazards identified during the execution phase should be captured and integrated into future plans and operations.

(2) MAKE RISK DECISIONS AT THE APPROPRIATE LEVEL IN THE CHAIN OF COMMAND: The commander should address risk guidance in his commander's intent. He then gives guidance on how much risk he is willing to accept and delegate. Allowing risk decisions to be made at the lowest level promotes mission continuity and develops leaders who know how to make risk decisions.

(3) ACCEPTING NO UNNECESSARY RISK: Commanders compare and balance risks against mission expectations and accept risks only if the benefits outweigh the costs. Commanders alone decide whether to accept the level of residual risk.

4. THE RISK MANAGEMENT PROCESS: The risk management process is outlined in FM 100-14 and FM 101-5. It consists of five steps, which may be as detailed as the factors of the mission, enemy, terrain, troops and time available (METT-T) allows. Generally, the process should be "in depth" for large scale operations requiring long term planning, "deliberate", but less detailed, for normal missions such as tactical training; or "hasty", (mental process only), for situations requiring decisions within minutes or seconds.

a. Identify Hazards: This step begins with an operation analysis, or time-line of the events expected to occur thru mission completion. Following the time sequence of the mission, make a preliminary hazard analysis, or a list of the hazards that could occur during the mission.

b. Assess the Hazards: Determine the **probability** of each hazard occurring and the **severity** of its impact on the mission. During the mission planning sequence commanders will use a written worksheet to rank hazard probability and severity. Each hazard is then assigned a level of risk. A single high-risk hazard will make the entire mission high risk. The risk assessment worksheet (enclosure 1) is an example of a written worksheet.

c. Develop Controls and Make Risk Decisions: This phase of risk management takes place during the course of action (COA) development, COA analysis, COA comparison, and COA approval of the military decision-making process. Beginning with the most serious hazard, develop controls that either, eliminate the hazard or reduce the level of risk the hazard poses to the mission. A relatively small change in mission profile may reduce the hazards residual risk level to low. Once the residual risk

is determined an educated risk decision can be made. It is critical to mission success that risk decisions are made at the appropriate level. Decision authority held too high hobbles battlefield commanders whereas decisions made too low may jeopardize the next higher commanders intent.

d. Implement Controls: Risk control measures should be integrated into SOPs, written and verbal orders, mission briefings and staff estimates. Commanders must ensure that the mission performer clearly understands the control measures to be followed. If during mission execution the control measures should become impracticable or impossible to implement, the mission should not continue until a risk decision is made at the appropriate level.

e. Supervise and Evaluate: Leaders at all levels must closely supervise the application of the controls developed in step 3 of the risk management process. Complacency, overconfidence and fatigue are only a few of the distracters that lead crewmembers to disregard controls put in place. Evaluation is critical to determine whether or not the controls used were effective or if they need to be modified prior to the next operation.

5. RESPONSIBILITIES:

a. The crewmember will:

- (1) Execute risk controls to standard.
- (2) Understand, accept, and implement risk reduction guidance.
- (3) Use the risk management process to assess hazards and take the necessary steps to reduce risk. Risks that are above individual control level must be passed up the chain of command for assessment and risk reduction options.

b. The pilot in command will:

- (1) Supervise completion of the risk assessment work sheet for individual crewmembers.
- (2) Ensure that crew coordination takes place from planning through the debrief phase of the mission.
- (3) Brief-back unanticipated hazards and any countermeasures that were taken to aid in future mission planning.

c. Mission planning cells will:

- (1) Implement risk management at the earliest stages of mission planning.
- (2) Develop risk-reduction options early enough in the

planning process to allow leaders to make decisions and implement countermeasures before flight crew briefings are conducted.

d. The Mission Briefer will review and approve the mission or forward to the commander, if necessary, for review/signature.

e. Commanders will supervise the risk assessment program. Complete collective training and unit risk assessment work sheets. Take active measures to eliminate or reduce risks through the crew assignment process and the aircrew training program.

f. The Safety Officer will:

(1) Advise the commander on all safety issues regarding the assessment of risk.

(2) Assist mission planners and operations officers in the development of risk reduction controls.

g. The staff will integrate risk controls into plans and orders.

6. RISK ASSESSMENT WORKSHEET (RAW): The mission briefer is responsible for ensuring that risk assessment is completed. A RAW is used to numerically quantify the risk of a mission. It is a tool for the commander and mission briefer to use in identifying where risk factors can be reduced to enhance overall safety. A RAW will be completed for each mission briefing. The goal is to clearly identify where risk is higher than necessary and reduce that risk through command input. The complete RAW will be maintained with the mission briefing form.

7. ENCLOSURE 1 (ROTARY WING SAMPLE RAW): This RAW may be used "as is" or modified as necessary to accurately assess risk values. Any block selected with a single asterisk assesses the mission no lower than medium risk regardless of the final risk value, and any block selected with a double asterisk assesses the mission as high risk regardless of the final risk value. Blocks marked with NA mean not applicable.

a. Block 1 (COMMAND RELATIONSHIP): Select the most appropriate value and place it in the upper right (Total) block. This block pertains to the command and control relationship between the PC/AMC and the mission briefer.

b. Block 2 (MISSION PLANNING):

(1) OPTIMAL - Planning time greater than 12 hours

(2) ADEQUATE - Planning time $2 < 12$ hours

(3) MINIMAL - Planning time < 2 hours

(4) SPECIFIC - Missions where every element of the mission is covered by the briefing officer. An example might be an operations order where detailed and exact information is

provided and rehearsed. Crewmembers have the opportunity to question areas that they are uncertain about.

(5) IMPLIED - Missions where the intent is known but not as specific, exact, or detailed. An example might be an APART evaluation where it is implied that the IP will evaluate the maneuvers dictated by the ATM.

(6) VAGUE - Missions where the intent and aspects of the mission are vague or unknown, such as a FRAGO.

c. Block 3 (MISSION COMPLEXITY): Select each task/mission to be flown. The total may encompass:

(1) ENTIRE MISSION: All tasks for the mission (use the highest number for all conditions that apply - Day, Night, NVD, IMC). Add the number of all that apply and place in the total block.

OR

(2) SUB-MISSION: Use only the number for the conditions of the sub-mission. This more accurately reflects different risk factors; i.e. day multi-ship mission followed by night single ship mission with different tasks. Use the additional columns in Block 12, to summarize the risk value, as appropriate for each sub-mission.

d. Block 4 (ADDITIONAL FACTORS): Select all that apply and place the number in the total block.

e. Block 5 (WEATHER - Ceiling/Visibility in meters): Select the most appropriate block for the worst predominant or intermittent weather that is forecast for departure, enroute, and destination. Place the number in the total block.

f. Block 6 (ILLUMINATION %): Select the lowest illumination that will be present during the mission. If the moon sets during the mission use a value of 5. Does not apply to AH-64 aircraft.

g. Block 7 (MOON ANGLE): Select the lowest angle that the moon will attain during the mission. Does not apply to AH-64 aircraft.

h. Block 8 (ELECTRO-OPTICAL FORECAST): Enter the value for the EO forecast if known. If unavailable add 5. Only applies to AH-64 aircraft.

i. Block 9 (CREW SELECTION/PC/PI/NRCM): Select an appropriate value for each crewmember. The RAW uses total time and total time in country (this tour) to determine experience level. When deployed outside of Germany, use time in country (previous rotations within the past 18 months) at deployed location.

j. Block 10 (FIGHTER MANAGEMENT): Select an appropriate value for each crewmember. This block encourages the use and

Appendix 2 (Risk Assessment) to ANNEX G (Training and Standardization - External) to the CASSD SOP

implementation of the "Fighter Management" program by ensuring that each individual is physiologically prepared to accomplish the mission. Prior to placing a number in the total block, adjust by adding the highest value for the portion of the crew duty day (one value for entire crew) that the mission is completed.

k. Block 11 (NVD CREW SELECTION): Select an appropriate value for each crewmember and place the sum in the total block. The RAW uses total NVD time and the last NVD flight to identify each crewmember's experience level. Required only for NVD flights.

l. Block 12 (RISK VALUE SUMMARY): Place the total from blocks 1-11, as appropriate, in column 1 for single aircraft. Columns 2-8 are for additional aircraft in a multi-ship mission. Columns 2-8 may also be used for single aircraft sub-missions to identify different risk factors.

m. Block 13 (TOTAL RISK ASSESSMENT BASED ON CREW CONFIGURATION):

The approval authority is as follows:

LOW RISK -	Mission Briefer
MEDIUM RISK -	Company or Troop Commander
HIGH RISK -	Battalion or Squadron Commander
EXTREMELY HIGH RISK -	Brigade/Regiment/Task Force Commander

Appendix 3 (Multi-Aircraft Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

1. REFERENCES:

- a. AR 95-1
- b. AR 95-3
- c. AR 385-95
- d. UR 95-1
- e. UR 95-7
- f. FM 90-4
- g. FM 1-101
- h. FM 1-107
- i. TC 1-201
- j. TC 1-204
- k. TC 1-210
- l. Appropriate Aircraft ATM
- m. Appropriate Aircraft Operator's Manual

2. PURPOSE: To establish standardized policies for formation flight, air assault operations, visual signals, and AMC briefing formats to be used by aviation units assigned or attached to V Corps.

3. GENERAL: Careful planning before conducting formation flight is essential to the safe, efficient control and maneuver of any size formation. Aviators performing formation flying must do so with an extreme sense of responsibility and with constant vigilance. Each crew member is responsible for reviewing the following items in TC 1-201, TC 1-204, and their ATM:

- a. Formation considerations
- b. Crew briefings
- c. Types of formations
- d. Basic flight techniques
- e. Formation turns
- f. Formation take-off
- g. Formation landing
- h. Formation changes enroute
- i. Formation break-up
- j. Rendezvous and join up
- k. Night formation flying
- l. Communication procedures
- m. IMC procedures
- n. Aircrew communication and coordination

Appendix 3 (Multi-Aircraft Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

4. ADMINISTRATIVE POLICIES:

a. Formation flights will be conducted IAW the references above.

b. If the weather is forecast to be at or below 500' ceiling and 3200 meters visibility (day) or 1000' ceiling and 5000 meters visibility (night), each aircraft within the flight will have the required publications and must meet the equipment requirements to perform the briefed inadvertent IMC procedures.

c. The AMC of each formation flight will ensure that a flight briefing is conducted. The AMC briefing format in enclosure 1 may be used.

5. AIRCRAFT LIGHTING REQUIREMENTS:

a. The AMC will brief aircraft exterior lighting for each mission. AMCs will ensure that the exterior lighting is in compliance with ICAO, AR, UR, and/or local regulations for the airspace/location of the mission.

b. The PC will ensure that the exterior and interior lighting is in compliance with the operator's manual, current DA, USAREUR, and local directives, and will meet mission requirements.

c. AMCs will establish lighting requirements for all aircraft during a mixed type aircraft multi-ship operations.

6. ENROUTE ALTITUDES: A minimum (hard deck) and a maximum enroute altitude should be briefed by the AMC. AMCs will comply with NVG airspeed and altitude restrictions contained in TC 1-210 and appropriate ATMs for aircraft assigned to the mission. The AMC will comply with TC 1-210 to determine the type of formation to be used for briefed airspeed and altitude requirements for the mission. An emergency safe altitude will be briefed for each leg of the flight if the mission is flown when the weather is forecast to be at or below that contained in item 4b above.

7. LOST COMMUNICATIONS: See enclosure 1, provided as an example of established SOP items.

8. DOWNED AIRCRAFT PROCEDURES: Should any aircraft go down during the mission, the PC of that aircraft will ensure that a radio call is made. The designated aircraft will follow the aircraft with problems until a safe landing is made. If trail goes down with problems, the chalk in front of him will follow

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him until a safe landing is made. Combat and combat training situations may dictate different procedures and will be briefed by the AMC as the situation warrants. For further information/guidance see enclosure 1.

9. FLIGHT PROCEDURES:

- a. A communications check may be completed IAW enclosure 1.
- b. Visual signals, see enclosure 1 as an example of SOP established procedures.
- c. Formations: All takeoff, enroute, landing, and formation changes will be as briefed by the AMC. Formation changes will be kept to a minimum. ACPs should be used to execute planned formation changes during radio silent operations. Description of the different types of formation and rotor disk separation requirements for each mode of flight will be IAW the references above and TC 1-210 for NVG. See enclosure 1 for further information and guidance.

10. NVG CONSIDERATIONS:

- a. Light discipline will be briefed in detail to all personnel involved in the mission. Detailed loading and off loading procedures must be briefed prior to mission execution. This is the responsibility of the AMC.
- b. All aircraft will be prepared for NVG flight IAW the references in paragraph 1.
- c. Minimum crew for the appropriate aircraft are established in UR 95-7.

11. RISK ASSESSMENT: See Appendix 2 to Annex G for risk assessment/management procedures.

12. PLANNING CELL: A mission planning cell should be established and its members exempted from other duties during the planning phase. Each cell member should have clearly defined duties. The planning cell is responsible for preparing diagrams, charts, and strip maps necessary for the mission. All diagrams should be to scale and constructed as accurately as possible to prevent confusion. The following charts should be prepared for mission briefings and kneeboard handouts:

- a. Task organization (crew assignments)
- b. Time schedule

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- c. Marshaling area
- d. Forward staging base/air head
- e. Objective
- f. Signal (Frequencies/call signs/prowords)
- g. Enroute card (time/distance/headings)
- h. Holding area
- i. IIMC diagram
- j. Master map with graphics

When possible, the commander's S-3 representative or the commander/AMC will prepare and conduct the mission briefing. No detail will be considered self explanatory and all phases of the operation will be briefed in detail. Portions of the mission briefing that do not apply to a given mission need not be briefed or mentioned.

13. SAFETY:

- a. Multi-ship operations by its very nature is demanding. Crew coordination techniques and division of responsibilities must be utilized to preclude task overload. Therefore it is imperative that the AMC ensure that flight responsibilities are distributed equally between all aircraft in the flight, thus precluding any one crew from assuming unnecessary duties.
- b. Should flight lead's communication/navigation equipment fail or become degraded, the lead position should be transferred to the chalk 2 aircraft. This applies to any equipment that would increase the workload or distract the crew from their primary mission of obstacle detection and avoidance.
- c. Attack lead/wing integrity should be maintained by having Team 2 take up the lead position.

14. REHEARSALS:

- a. Rehearsals enhance mission preparation, mitigate risk, and prepare units for success. In accordance with CINCUSAREUR training guidance, units will rehearse collective training prior to execution. Multi-ship mission preparation includes rehearsal time.
- b. Units rehearse multi-aircraft operations with an aviator from each crew. The rehearsal media can be as simple as a sketch map or as complex as a full-dress rehearsal under less strenuous conditions. A good rehearsal method replicates spatial orien-

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tations, movements, and communications at crucial times in the mission. The mission commander supervises the rehearsal.

c. Rehearsal time is not unlimited. Commanders should allocate time for the rehearsal to the lowest practicable echelon.

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AMC MISSION BRIEFING

The mission briefing will be presented in the standard five paragraph format. The briefing materials should be available prior to the scheduled briefing time to allow preparation of individual navigational cards and maps. A final brief will be held prior to departure to update weather, confirm the time hack, and disseminate any changes to the previous briefing.

NOTE: SOP in the margin indicates reference to the Standard Operating beginning on page G-3-13 of this enclosure. If the task briefed does not deviate from the description, the briefer may state 'per SOP'. If the mission will not be 'per SOP' or if there is a question by any member of the mission crew, the briefer will brief the task in its entirety.

Classification (TS, S, C, U, NOFORN)
Roll Call/Aircraft Status Sheet Completed
"Hold all questions until the end of the briefing"
Time hack (GPS time)
OPORD number
Map References/Publications Required
Time Zone Used Throughout the Order (Local/ZULU)
Task Organization

1. Situation

a. Enemy Forces (Photos, maps, overlays):

- (1) Area of Interest
- (2) Area of Operations
 - (a) Troop concentrations/locations/uniform
 - (b) ADA positions and type
 - (c) Movement, advance parties, OPs, etc.
 - (d) Capabilities (NVG, radar, electronic, etc.)
 - (e) Course of Action

b. Friendly Forces:

- (1) Mission of next higher headquarters
- (2) Mission (and flight routes) of adjacent units
- (3) Airspace management (A2C2 altitudes, range brief)
- (4) Location and description of soldiers and equipment

c. Weather - Planning weather to include:

Ceiling-	Max PA-	Temp-	Min ALTSG-
Visby-	SR-	SS-	MR- MS-
Wind-	% illum-	EENT-	BMENT-

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FLIR fcst- FLIR Xover-
PAs of PZs and LZs - MSL Alts of PZs and LZs-
Sea data: Water temp- Wave HT- Currents-

- d. NOTAMS
- e. Attachment and detachments
- f. Public affairs cover story
- g. Essential Elements of Friendly Information (EEFI)
- 2. Mission: WHO, WHAT, WHEN, WHERE, AND WHY, Clear concise
- 3. Execution:
 - a. OVERALL CONCEPT OF THE OPERATION
 - (1) Scheme of maneuver (phasing)
 - (2) Fire support plan
 - (3) Electronic warfare (Broad scheme, priority jamming)
 - b. SUB-UNIT'S MISSIONS
 - (1) Flight 1 Lead A Company
 - (2) Flight 2 or Chalk 2 or B Company
 - (3) Flight 3 Chalk 3 C Company
 - (4) Flight 4 Train D Company
 - c. AVIATION COMMANDER'S INTENT
 - d. GROUND TACTICAL PLAN
 - e. MARSHALING AREA/INITIAL STAGING BASE - use cards/boards when available
 - (1) APU/ENG Crank
 - SOP (2) Comm check frequencies and time
 - (3) Line up procedures and time
 - (4) Take off procedure and time
 - (5) Formation/airspeed/altitude
 - SOP (6) Exterior lighting
 - (7) Primary and alternate routes
 - (8) Fuel requirements
 - (9) Prim/alt PZs (loc/name/descrip/sketch/photo)
 - SOP (10) Ldg form and dir, go around procedures and dir
 - (11) PZ markings and control
 - (12) PZ time
 - (13) PZ security
 - (14) Special equipment required

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SOP (15) Back-up aircraft

f. LOADING PHASE

- (1) PZ Posture/Layout (sketch)
- (2) Troop and equipment load (total troops/equipment)
 - (a) Troops: ACL, how equipped
 - (b) Cargo:
 - (1) INT - WT., size, tiedowns
 - (2) EXT - WT., slings, markings, harness

g. AIR MOVEMENT PHASE

- SOP
- (1) Take off procedure and time
 - (2) Formation/airspeed/altitude
 - (3) Exterior lighting
 - (4) Primary and alternate routes
 - (5) Prim/alt LZs (loc/name/descrip/sketch/photo)
 - (6) Ldg form and dir, go around dir
 - (7) LZ markings and control
 - (8) LZ time
 - (9) LZ security
 - (10) Combat Control Team procedures (freq/call sign)
 - (11) Commo unique to this portion

h. RETURN AIR MOVEMENT PHASE

- (1) Formation/airspeed/altitude/exterior lighting
- (2) Prim and alt routes
- (3) Prim/alt LZs (loc/name/descrip/sketch/photo)
- (4) Ldg form and dir, go around dir
- (5) LZ markings and control
- (6) LZ time
- (7) LZ security
- (8) Commo unique to this portion

i. FIRE SUPPORT, TO INCLUDE SEAD, TAC AND ATTACK AIR

- (1) Location of arty, G/T lines - preplanned targets
- (2) Naval gunfire location, G/T lines - planned targets
- (3) Firing times - start/stop
- (4) Attack assets:
 - (a) number and type avail
 - (b) routes
 - (c) link up point
 - (d) tech of movement
 - (e) time on station
 - (f) BPs
 - (g) frequencies/callsigns, etc.

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- (5) TAC Air (routes, positions, time on station, targets, avail of IR illum)
- (6) Availability of smoke deployment and illum
- j. ADA PLANS (weapons status and corridors)
- k. LAAGER PHASE
 - (1) Formation/airspeed/altitude/exterior lighting
 - (2) Primary and alternate routes
 - (3) Prim/alt laager area (loc/name/descrip/sketch/photo)
 - (4) Laager type (air, ground, shutdown or running)
 - (5) Ldg form and dir, go around dir (if landing)
 - (6) Laager markings and control
 - (7) Laager time
 - (8) Laager security plan
 - (9) Call forward procedure
 - (10) Commo unique to this portion
- l. EXTRACTION PHASE
 - (1) Take off procedure and time
 - (2) Formation/airspeed/altitude/exterior lighting
 - (3) Primary and alternate routes
 - (4) Prim/alt PZs (loc/name/descrip/sketch/photo)
 - (5) Ldg form and dir, go around dir
 - (6) PZ markings and control
 - (7) PZ time
 - (8) PZ security
 - (9) Supporting plans
 - (10) Commo unique to this portion
- m. COORDINATING INSTRUCTIONS
 - (1) Air movement Table and Bump Plan
 - (2) Weather abort time
 - (3) Mission abort criteria
 - (4) Rules of engagement and fratricide prevention
 - (a) Fire targets, free fire areas, test fire areas
 - (b) Limits to line of fire, type of formation
 - (c) Location M60Ds go in/out
 - (5) Deception Measures - false insert, smoke, arty
 - (6) ASE Employment/usage in the formation
 - (7) Penetration points
 - (8) Contingency plans
 - (a) Fuel
 - (b) Maintenance
 - (c) Crew replacement
 - (9) ECCM (availability of EH aircraft)

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- (10) Aircraft requirements (hook, ASE, M60D, ANVIS)
- (11) Doors open/closed
- SOP (12) Actions on contact
- SOP (13) Chalk duties - use cards/boards when available
 - (a) Radios
 - (b) Navigation
 - (c) PPC, WX, flt plan, NOTAMS, range brief
 - (d) Transponder
 - (e) Reports (MIJI/NBC/Spot)
- SOP (14) Visual signals - (lost comm/lead changes)
- SOP (15) Downed aircraft/aircrew pick-up procedures
- SOP (16) Inadvertent IMC (N/A or brief procedures)
- (17) Back-up aircraft procedures
- (18) Go around procedures
- (19) Personal equipment requirements (TA 50, M9, etc)
- (20) AMC duties: mission brief/risk assessment, fuel/sortie status, SEAD missions, call for fire
- (21) Passenger Briefing

4. Service Support:

- a. FARP location (primary and alternate)
 - (1) Location, name, description, sketch, photos
 - (2) Entry/Exit procedures/comm requirements
- b. Health service support (availability of MEDEVAC)
- c. ALSE requirements (other than standard)
- d. Class I
- e. Class III and V
- f. Class IX

5. Command and Signal

- a. Command
 - (1) Location of commanders and assumption of command procedures (AATFC, AMC, serial Cdr.).
 - (2) Point where Attack/TAC Air comes under OPCON as aerial maneuver element and point where released.
- b. Signal - use cards/boards when available
 - (1) Radio nets, freqs/fill, call signs, FSO, TAC air, supported unit, MEDEVAC, AATFC, FARP, etc.
 - (2) SOI in effect and time of change
 - (3) Challenge and password/running password
 - (4) Authentication table in effect
 - (5) Nav aids (freqs, location, and operational times)
 - (6) IFF codes
 - SOP (7) Brevity codes (PZ clean, abort, alt LZ/PZ etc.)

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6. Mission Training Objectives
7. Mission debrief time and location
8. Time Hack
9. Back Brief (conduct a back brief from each PC if possible)
10. Safety Tip

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MISSION DEBRIEF

A debriefing will be conducted by each participating unit as soon as practicable upon completion of the mission. If units operate jointly during any portion of the operation, representatives of each unit will attend the debriefing. All phases of the mission planning and execution will be addressed with the intent of improving all aspects of the mission. The risk assessment procedures used during the mission should also be reviewed. AH-64 crews will utilize their video tapes as part of the debriefing process.

1. Roll call - flight time data completed on aircraft status sheet by PCS.

2. General

- a. Unit
- b. Mission
- c. Opord number
- d. Number of aircraft
- e. Flight crews

3. Mission preparation:

- a. OPORD
- b. Planning
- c. Rehearsals

4. Mission execution - debrief all phases of the mission in order.

- a. Marshaling Area
- b. Enroute to Initial Staging Base (ISB)
- c. ISB operations
- d. Enroute to Forward Staging Base (FSB)
- e. FSB/airhead operations
- f. Ingress route
- g. Objective area
- h. Egress route
- i. Holding area
- j. FARRP operations
- k. Departure from FSB/airhead

5. Intelligence

- a. Enemy:
 - (1) Describe all enemy sightings
 - (2) Enemy BDA - (personnel/equipment)
 - (3) SAM/ADA information

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- (4) ECM/MIJI encountered
 - (5) NBC data
 - (6) Locations and equipment other than briefed
 - (7) Other information
 - b. Weather conditions
 - (1) Briefed weather
 - (2) Unforecast condition encountered
 - (a) Ceilings/visibility
 - (b) Precipitation
 - (c) Other
 - c. Terrain
 - (1) Map corrections
 - (2) Locations of obstacles/hazards
 - (3) Roads/trains conditions/traffic/refugee/military
 - (4) Waterways/bridge conditions
- 6. Administrative
 - a. Aircrew status
 - b. Aircraft status
- 7. Collect/destroy classified material
- 8. Commander's comments

The following are example of items that have been standardized to meet "normal" mission profiles and to reduce mission briefing times. AMCs may use "as per SOP" during the mission brief if the item can be accomplished exactly as indicated below. AMCs may also use "as per SOP" with slight modifications to the SOP item. If SOP items will not meet the requirements for a particular mission the AMC will brief the entire specifics of that item. Items marked with an asterisk are mandatory SOP items and will be complied with for multi-ship operations. All PCS involved in the mission must know or have this information available to them for the entire mission. Paragraph numbers shown relate to the AMC Mission Briefing procedures beginning on page G-3-5 of this enclosure.

1. OPENING REMARKS - The aircraft/crew status sheet, if available, will be completed by the PC prior to the mission briefing.
2. Para 3. e.(2) COMM Check - Lead initiates the Comm check on FM1 (secure), UHF, VHF, and FM2 (secure). Units equipped with HAVEQUICK and SINGARS will include these radios in the check.

Comm check Frequencies - FM1 _____
UHF _____
VHF _____
FM2 _____

The check continues in chalk order with the call sign stated on each radio (if communication problems are known state so in check. i.e. "Negative secure", or "Negative FM2"). If during the Comm check an aircraft does not respond, lead will attempt to contact, if still no response lead will advise the next chalk to continue. After completion of the comm check the AMC will contact any aircraft that was not received and assess the situation. Once the check is completed the AMC will transmit "Execute Mission Freqs" on two different radios.

3. Para 3.e.(6) and Para 3.g.(3) Exterior Lighting: The following light signals will be "Standard" unless otherwise briefed:
- a. Single ship will be IAW AR 95-1, UR 95-1, and host nation requirements.
 - b. Multi-ship - DAY:
 - (1) Line-up: (UH-60) All aircraft except trail turn on the night anti-collision light, trail's day anti-collision light remains on. (AH-64) White strobes on during taxi.

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(2) Ready for departure: Anti-collision lights off, trail's anti-collision light remains on. When all the anti-collision lights are off TRAIL transmits "BEACON."

(3) Flight lead acknowledges the up call and departs as briefed or in 5 seconds, whichever is later.

(4) Aircraft unable to depart with the flight, anti-collision light on and hold position until all aircraft have departed.

c. Multi-ship - NIGHT/NVD:

(1) Line-up: (UH-60) All aircraft except trail will turn off the formation lights, trail's formation lights will remain on. (AH-64 with NVG) All aircraft except trail will dim the position lights, trail's will remain BRIGHT.

(2) Ready for departure: Formation/position lights on/bright when ready for departure. When all of the formation lights are on or BRIGHT, TRAIL transmits "BEACON."

(3) Flight lead acknowledges the up call and departs as briefed or in 5 seconds, whichever is later.

(4) Aircraft unable to depart with the flight, anti-collision light on and hold position until all aircraft have departed.

*4. Para all referenced: Formation, airspeed, and altitude - The flight should maintain the PZ formation and 70 KIAS until the SP and then will assume the briefed enroute formation and airspeed. The flight should assume the briefed landing formation at the RP, and adjust airspeed for the approach.

*5. Para 3.e.(10) Go-around procedures - A go-around direction will be given each formation landing area. Aircraft initiating a go-around will state "Chalk # Go-Around left/right", all aircraft behind that chalk will follow unless the aircraft is already on the ground. The aircraft on the ground will remain on the ground until directions have been received by the AMC. The AMC will determine a course of action (alternate LZ/PZ, reattempt the approach, etc.).

*6. Para 3.e.(15) Back-up aircraft - AMCs that have available a flying or cranking spare will brief that the spare aircraft will fall into chalk vacancy unless the vacancy is lead, then the cranking spare will assume chalk 2.

7. Para 3.m.(12) Actions on contact (other than Attack formations) - The AMC will normally try to maintain formation integrity and bypass the threat, suppressing as necessary. Aircraft receiving fire will state call sign, type threat, clock position

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of the attack in relation to the flight, altitude and distance (i.e. "Mike two-zero, small arms fire, three o'clock low, 200 meters"). Situations (aerial threat) may dictate that the formation be dissolved. The AMC, or the aircraft that identifies the threat, will announce "Bandit Break - Right/Left"; then determine follow-on action until the AMC or flight lead resumes control of the flight.

Actions on contact (Attack helicopter formations) - The unit commander will normally try to maintain formation integrity and bypass the threat, suppressing as necessary. Aircraft receiving fire will state call sign, type threat, clock position of the attack in relation to the flight, altitude and distance (i.e. "Mike two-zero, small arms fire, three o'clock low, 200 meters"). If the contact is an aerial threat the aircraft detecting an aerial threat will announce "BOGEY" if the threat is not identified or "BANDIT" if positively identified as enemy. The flight will immediately deploy to cover and:

a. If undetected and there is little possibility that the threat will detect the flight, it may be preferable to allow the threat aircraft to continue unaware. Otherwise maneuver into a position where the enemy aircraft can be effectively engaged, either from a concealed battle position or a superior firing position (ideally from the enemy's 6 o'clock position).

b. If detected the decision must be made whether to engage or evade the enemy. If you are observed and enemy aircraft indicates that an attack is imminent, you must fire first or take evasive action. The NOE environment is the best position from which aircrews can engage enemy helicopters. Engagements should be made from the maximum effective range of the weapons systems available.

Actions after the break-up will be dictated by the terrain and the tactical situation. Whereas the safest method is to land and rejoin, this may not be tactically sound. Reforming the flight in air, the least desirable, could be the safest alternative. In some cases, a mission abort may be the correct decision. The AMC will brief actions on contact and which method will be used in re-forming the flight.

REJOIN ON THE GROUND (OR AT A HOVER): The AMC will announce the secure location where the flight will reform. Once all aircraft are accounted for, they will reform, takeoff and continue the mission.

LINK-UP IN THE AIR (AT A POINT): The AMC will announce the SP/ACP/RP for the airborne rendezvous. The FL will enter an orbit at the link-up point in a standard rate turn at 70 knots. Joining chalks will enter the orbit at 80 knots until the flight is reformed. Extreme diligence must be used during night operations as closure rates are difficult to estimate. The AMC will decide whether to continue, modify, or abort the mission, as the situation dictates.

REJOIN IN THE AIR (ENROUTE): All aircraft will proceed to the nearest SP, ACP, RP on the primary or alternate route and reform the flight en route. The FL will make radio contact with the chalks, announce the point that the flight is diverting to, and adjust his airspeed to allow the flight to reform. The flight will form into a trail formation initially. The AMC will decide whether to continue, modify, or abort the mission, as the situation dictates.

8. Para 3.m.(13) Chalk duties - These duties are established for a flight of three aircraft, for flights having more than three aircraft, further distribution of these duties may be delegated.

Chalk #1 -	Obstacle avoidance, navigation, *transponder, *non-tactical ATC communication
Chalk #2 -	Primary navigation, obstacle avoidance, flight plan, weather, NOTAMs, range brief
Chalk #3 -	Navigation, tactical FCC flight following, PPC
Trail -	Navigation, Convoy/Beacon, reports

*Identifies duties that must be accomplished.

NOTE

The PPC is primarily for AMC planning, each PC is required to know the performance data of his aircraft.

NOTE

In flights of three or more, the AMC should not fly as a crew member in the flight lead or Chalk 2 aircraft.

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9. Para 3.m.(14) VISUAL SIGNALS/LOST COMM/LEAD CHANGE procedures
- The first chalk to become aware of the lost comm aircraft's situation will inform the AMC. The crew of the next to last chalk should monitor the trail aircraft for problems. If the lost comm aircraft had comm duties assigned the next chalk will assume those duties, or as directed by the AMC.

a. Departing the Pick-up Zone:

DAY - In chalk order, after loading the CE/OR will give the next aircraft a thumbs up, the aviator in the next aircraft will acknowledge with a thumbs up. This will continue in chalk order until trail has received a thumbs up from the previous aircraft and is ready for takeoff. If all aircraft have colored cards available the CE will show cards, the aviator will respond as above to the card signal.

N/NVG - After landing formation lights will be turned off. Turn on formation lights in chalk order when the aircraft in front of you has turned their lights on and your aircraft is ready for takeoff. The trail aircraft will give the brevity code "BEACON" on two briefed frequencies when all aircraft show proper visual signals. Lead will respond "ROGER BEACON". The flight will takeoff 5 seconds later or at the briefed time. The AMC will brief other procedures as needed for "hot" PZ operations.

NOTE

(NVG) IR SEARCHLIGHTS WILL BE TURNED ON AND DIMMED TO THE OFF POSITION AT THIS TIME AND LEFT ON. NOT REQUIRED IF THE SEARCHLIGHT WILL NOT BE USED UNTIL THE END OF MISSION.

b. Departing the Landing Zone - No visual signals required, aircraft depart in chalk order. Lead will maintain 60-70 KIAS to the SP or until the brevity code "CONVOY" is received and will continue at the briefed airspeed. If "CONVOY" is not received by the SP lead will proceed as briefed and AMC will assess the situation. During lost comm, if your aircraft receives damage or has a maintenance problem that will not allow continued flight, (DAY) - turn on the night anti-collision light, (N/NVG) - turn on the IR position lights to flash. The next aircraft will attempt to recover the crew if possible, if not possible continue in chalk order and inform the AMC.

c. ENROUTE VISUAL SIGNAL/LOST COMM/LEAD CHANGE procedures -

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(1) DAY - EXCEPT LEAD, if you experience lost comm turn on the night anti-collision light for one minute and continue with the mission until at a secure area. LEAD, turn on the night anticollision light and slow to 60-70 KIAS, chalk two will inform the flight, and the flight will assume a staggered left formation. Once formed, lead will turn off the anti-collision light, execute a turn, clear the formation, and slow to allow formation to pass. Once clear lead will assume trail until at a secure area and the AMC will assess situation.

(2) *N/NVG - EXCEPT LEAD OR TRAIL, if you experience lost comm turn on normal/IR position lights to flash dim for 1 minute, then resume the briefed lighting and continue with the mission until at a secure area. LEAD, turn on the position lights to normal/IR flash dim and slow to 60-70 KIAS, chalk two will inform the flight, and the flight will assume a staggered left formation. Once formed trail will give the brevity code "convoy". Chalk two will turn on normal/IR position lights flash dim, at that time lead will acknowledge that the flight is in the correct formation by turning his position lights back to the briefed lighting, and execute a minimum of a 45 degree right turn, clear the formation by a minimum of eight to ten rotor disks, and slow to allow the formation to pass. Once clear lead will assume the trail position until at a secure area and the new lead will assume the briefed lighting. The original trail aircraft will call "convoy" when the old lead is in the trail position. Upon arrival at a secure area the AMC will assess situation and execute changes as required to continue the mission. If the damage is limited to just communications the aircraft should be placed in the next to last position. TRAIL - Maneuver to a safe position at least three rotor disk separation from the preceding aircraft and flash the landing light (night) or IR searchlight (NVG). The preceding aircraft will notify the AMC, acknowledge TRAIL by adjusting the aircraft lighting to the TRAIL configuration, decelerate to allow the former TRAIL to assume the next to last position, and inform lead when the flight is reformed with the codeword "CONVOY."

(3) *N/NVD (AH-64) - EXCEPT LEAD, if you experience lost commo turn position lights to bright for 5 seconds then resume the briefed lighting and continue with the mission until at a secure area. LEAD, turn on the position lights to bright and turn 45 degrees away from the course, assume a parallel course eight to ten rotor disks from the flight, decrease airspeed by 20 knots, and resume briefed lighting. Chalk two will inform the flight, assume flight lead, and continue the mission. The original lead will then assume the trail position. The original trail aircraft will call "convoy" when the old lead is in the

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trail position. Upon arrival at a secure area the AMC will assess situation and execute changes as required to continue the mission. If the damage is limited to just communications the aircraft should be placed in the next to last position.

*d. Lead changes - The AMC should conduct N/NVD lead changes on the ground if at all possible. Lead changes in-flight during N/NVD formations will be conducted as outlined above for lost comm at the direction of the AMC and conducted by the lead aircraft. Lead will use comm commands instead of the light signals. Lead changes during the day will be conducted by the lead aircraft when directed by the AMC.

10. Para 3.m.(15). Downed aircraft/aircrew pick-up procedures - All aircrew members and other "high risk" personnel will ensure that they have completed a DD Form 1833 Isolated Personnel Report (ISOPREP). Personnel equipped with the PRC-112 will enter their radio PLS code and current discrete frequency in block 14 on the ISOPREP card. The PLS code will be the PRC-112 four digit serial number followed by two zeros. The unit S-2 will maintain and ensure ISOPREP cards are completed properly and kept current.

NOTE

Destruction of aircraft will not be accomplished unless directed by the Brigade/Task Force commander.

During administrative/peace time missions the trail aircraft should follow the downed aircraft to provide assistance and advise the AMC of the situation. Combat/simulated combat missions during exercises:

a. PZ - Advise the AMC, the AATFC will determine whether to delay, abort, or use the spare aircraft if available and execute the bump plan if required. Crew will remain on station to assist the maintenance contact team and relocate the aircraft based on the AMC decision/guidance. If in a hot PZ try to board another aircraft with the downed aircraft's classified documents and equipment, if unable join the remaining ground unit or proceed as indicated in b. below.

b. Enroute - Secure/destroy classified documents/equipment, destroy the aircraft only if specifically briefed to due so. Proceed to the nearest safe RP, SP, or ACP along the briefed route(s) or to nearest friendly unit. Pickup times will be one hour before sunrise or one hour after sunset.

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c. LZ - Proceed as indicated in a. and b. above as the situation dictates.

*11. Para 3.m.(16) Inadvertent IMC - if the weather is forecast to be below a 1000 foot ceiling and/or 5 kilometers visibility a staggered left or staggered right formation should be used, the planned enroute altitude should be no lower than 100 feet. This procedure is not required to be briefed if the weather is forecast at or above the minimums stated above. If inadvertent IMC is encountered: Lead maintain heading and climb to briefed altitude. Additional aircraft turn away from the flight (Left or Right) 10 degrees multiplied by their chalk number and climb to briefed altitude. For example: in a staggered right formation chalk 2 would turn right 20 degrees and chalk 3 would turn left 30 degrees from lead. Contact appropriate facility.

NOTE

VERTICAL STACK UP IS NOT PERMITTED IN GERMAN AIRSPACE.

*12. Para 5.b.(7) Brevity codes - brevity codes for PZ clean, abort, alternate LZ/PZ, etc., will not be standardized due to coordination requirements with the supported unit. The AMC will ensure that each PC from TAC Air or other tasked/attached aviation units have the information below:

ALIVE -	ALL AIRCRAFT RETURN TO FLY RPM, GIVE VISUAL SIGNAL IN CALK ORDER WHEN READY, TRAIL CALL BEACON (AMC/LEAD CALL)
BANDIT BREAK -	EXECUTE ACTIONS ON CONTACT (AMC CALL ONLY)
BEACON -	FLT READY (TRAIL CALL)
BINGO -	LOW FUEL
CLOSING -	TRAIL FORMING ON FLIGHT
CONVOY -	FLT JOINED (TRAIL CALL)
DEAD -	DELAY, ALL AIRCRAFT SHUT DOWN, PCS GO TO AMC'S AIRCRAFT (AMC CALL)
DREAM -	LEAD KNOWS POSITION
HEAVY METAL -	UNABLE TO MAINTAIN AIRSPEED
JELLY 1,2,3,or4 -	FREQ JAMMED GO TO CORRESPONDING COMM CHECK FREQ FOR CALLED NUMBER, 1=FM1 2=UHF 3=VHF 4=FM2
LAZY -	DELAY, ALL AIRCRAFT GO TO ENGINE IDLE AND MONITOR ALL COMM (AMC/LEAD CALL)
MINNIE + OR -	GREATER THAN ONE MINUTE OFF OF SCHEDULED CP/ACP/SP/RP (+ = EARLY; - = LATE)

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NAV LEFT/RIGHT- GREATER THAN 500 METERS OFF COURSE LEFT OR
RIGHT (NORMALLY CHALK TWO)
NIGHTMARE - MIS-ORIENTED NEED DIRECTION
ROGER BEACON - TAKE OFF IN 5 SECONDS OR AT BRIEFED TIME
ROUNDUP - GIVEN BY LEAD AT RP, ASSUME LANDING FORMATION
SOCKET - AIRCRAFT DAMAGED/MALFUNCTION, SEND MAINTENANCE
TEAM IF AVAILABLE, UNABLE TO CONTINUE FLIGHT
(GIVE TAC CALL SIGN)
TRAIL - FLIGHT IS IN A TRAIL FORMATION

1. REFERENCES:

- a. UR 95-1
- b. TC 1-201
- c. TC 1-204
- d. FM 1-202
- e. CALF/CHAD-GER

2. PURPOSE: Provides procedures for preparation of tactical missions, to include map selection, preparation, and other navigation aids.

3. SCOPE: These procedures apply to all tactical training and operational missions conducted by aviation units assigned or attached to V Corps. These procedures are established as basic guidelines. They are proven techniques for successful mission accomplishment, for navigation planning. They are not intended to be the final answer to every situation.

4. GENERAL: The successful completion of tactical missions is directly related to quality mission planning. By standardizing planning techniques, each aviation unit will be able to operate independently, or when task organized with other elements by the V Corps Commander.

5. HELICOPTER TERRAIN FLIGHT: Helicopter terrain flight is defined as flight at 200' feet or less above the highest obstacle (AHO). Refer to TC 1-210 for NVG airspeed/altitude limitations. These limits also apply to AH-64 aircrews when a crewmember is manipulating the flight controls using NVGs.

6. MAP SELECTION:

- a. Assemble as many maps as possible of the area of operations. Overhead imagery, if available, is recommended. The 1:250,000 TFC(L), 1:250,000 JOG, and tactical 1:50,000 or 1:100,000 are some maps that may be utilized.

NOTE

The 1:250,000 Joint Operations Graphics (JOG) does not depict the aeronautical information as does the 1:250,000 Transit Flying Chart (Low Level) TFC(L), nor is the JOG updated as regularly as the TFC(L). The TFC(L) should be used if available for the area of operations.

Appendix 4 (Terrain Flight Planning) to ANNEX G (Training and Standardization - External) to the CASSD SOP

b. The 1:250,000 JOG or TFC(L) (most current edition) should be the primary map for planning and flying the enroute portion of the mission. The scale permits a relatively small map uncluttered with extraneous information. It has Lat/Long and UTM features, and when properly prepared, is NVG compatible. Consult the Chart Amendment Low Flying (CALF), CHAD-GER, and NOTAMS for the most current changes and hazards.

c. The tactical 1:50,000 or 1:100,000 map should be used during the objective phase of the mission (holding areas, FARPs, targets) and should be prepared starting at least 5 NM from the objective area. It will also be the primary map for mission planning and execution for routes flown below 200' AHO. Hazards from current TFC(L) should be posted on the 1:50,000 or 1:100,000.

7. ROUTE SELECTION:

a. The route to and from the objective must be tactically sound and conducive to successful navigation.

b. Refer to TC 1-204 for detailed route planning considerations.

8. NIGHT AIDED TECHNIQUES:

WARNING

The visual range of the Image Intensification NVG devices may not allow aviators enough time to avoid obstacles. Therefore, aviators must exercise extreme care when using the devices during terrain flight modes. Aviators should reduce ground speed so that they can detect and avoid obstacles when ambient light levels are low or visibility is poor because of weather conditions.

a. Aviators using Image Intensification Devices NVGs will familiarize themselves with the limitations and techniques described in paragraph 2-6, TC 1-204, with emphasis on the following:

- (1) Depth perception and distance estimation.
- (2) Scanning techniques.
- (3) Obstruction detection.
- (4) Spatial disorientation.
- (5) Weather.

WARNING

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The visual range of thermal-imaging systems may not allow aviators enough time to avoid obstacles. Therefore, aviators must exercise extreme care when using the systems during terrain flight modes. Aviators should reduce ground speed so that they can detect and avoid obstacles when thermal resolution is poor because of atmospheric conditions.

b. Aviators using Thermal-Imaging Systems (PNVS) will familiarize themselves with paragraph 2-10, TC 1-204 with emphasis on the following:

- (1) Depth perception and distance estimation.
- (2) Scanning techniques.
- (3) Spatial disorientation.
- (4) Airspeed and ground speed limitations.
- (5) Weather.

9. AERIAL CHECKPOINT SELECTION (ACPs): Refer to paragraph 6-7, TC 1-204 for ACP selection criteria.

10. NIGHT VISION DEVICE (NVD) MAP PREPARATION: Refer to paragraph 6-8, TC 1-204 for detailed map preparation information.

11. TIME/DISTANCE/HEADING CARDS:

a. Electronically produced time/distance/heading cards are acceptable and recommended, provided they are kneeboard size, letters and numerals are easily readable in low ambient light conditions, and the card is kept in a simple format.

b. Prior to posting for briefings, all times, distances, and headings should be rechecked by the planning cell for accuracy.

12. DIAGRAMS/BRIEFING CHARTS/ENROUTE CARDS:

a. All diagrams produced as either briefing charts or enroute kneeboard cards should have the following minimum information posted:

- (1) Identification (i.e. ACP 1, FARP Echo, PZ Blue)
- (2) MSL Terrain Elevation
- (3) Course - Magnetic heading/distance
- (4) Scale (1:50,000 or 1:100,000) or (NOT TO SCALE)
- (5) Pertinent Hazards

b. Use of the route planning card symbols found in paragraph 6-10, TC 1-204 is preferred.

13. SAFETY:

WARNING

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The radar altimeter is not to be used as a terrain avoidance instrument. It only provides absolute altitude information from the belly antennas of the aircraft and does not provide altitude information from approaching terrain.

a. Aircraft will remain at least 600 meters from villages, towns, and built up areas. Avoid hover operations where damage may occur.

b. Aircraft will avoid over flight of buildings, livestock, or assemblies of people.

c. Contour/NOE flight will be conducted on pre-reconnoitered routes/areas.

d. A day hazards reconnaissance will be conducted no earlier than 72 hours prior to night operations (work week) or 120 hours prior (over a weekend) when utilizing infrequently used areas of the HFCA or when conducting exercises outside of the HFCA.

1. REFERENCES:

- a. AR 95-1
- b. AR 385-95
- c. UR 95-1
- d. FM 1-400
- e. FM 57-220
- f. FM 57-230
- g. Appropriate Operator's Manual
- h. Appropriate ATM
- i. Local Directives

2. PURPOSE: To establish standardized procedures to conduct safe military paradrop operations by V Corps units.

3. GENERAL: The aircrew will be familiar with the above references prior to conducting a paradrop mission. The aircrew will be qualified in parachute operations by an IP/SP/SI/FI with appropriate entries on DA Form 7122-R. Qualification will consist of a minimum of one paradrop, day or night, in the type of jump being conducted, static line or free fall. The PC is responsible for the overall conduct and safety of paradrop operations. The jump master is the technical expert. The aircrew is required to read this SOP prior to performing each mission. A normal crew consists of a PC, PI, FE/CE, and a qualified and current jump master.

4. RESPONSIBILITIES:

- a. The commander will:
 - (1) Integrate risk management techniques into the planning and execution of the mission.
 - (2) Assign paradrop qualified crews or crewmembers who are receiving training from an SP, IP, SI, or FI. When paradrop operations are not on the individual's commander's task list of paradrop qualified crewmembers, company commanders will conduct a detailed risk assessment, mitigate risks, and authorize paradrop operations on the mission brief sheet.
- b. The standardization section will insure that unit instructors conduct qualification IAW the appropriate ATM and this SOP.
- c. The PC will ensure:
 - (1) That a NOTAM has been posted with airfield operations or AFOD 24 hours in advance. The supported unit is responsible for coordinating the NOTAM.
 - (2) That crew coordination aspects have been briefed and all crew members are current and qualified to perform the mission.

(3) That the crew, jump master, jumpers, and Drop Zone Safety Officer (DZSO), receive a safety briefing including emergency procedures.

(4) That a passenger manifest is maintained for each jump with ground personnel.

(5) That the aircraft is properly prepared.

(6) That the announcement of "one minute out" is given to the FE/CE, who will relay it to the jump master.

(7) That the jumpmaster is advised when he is cleared to issue "GO" command.

(8) That ATC facilities are advised of the current status of operations including "1 minute out", "jumpers away", and "jumpers on the ground."

d. The FE/CE will:

(1) Ensure that the aircraft is prepared for paradrop operations with the assistance of the jump master.

(2) Be prepared, in the event of an emergency, to pull in all static lines and deployment bags.

(3) Equip the aircraft with safety belts/straps for the jumpers, and with a headset and a harness for the jump master.

(4) Remain secured with a safety harness or in a crew member seat (if installed) throughout the mission.

(5) Once cleared for the command "GO" by the PC, will be prepared to notify the PC when all parachutists have departed the aircraft successfully.

(6) Monitor deployed jumpers to ensure that they have cleared the aircraft and report clear to the PC.

(7) Monitor deployed jumpers' positions by reporting clock position and distance from the ground to the PC until the parachutists have landed.

(8) Ensure that all parachutists are loaded and secured prior to each take-off and/or landing.

e. The jump master will:

(1) Prepare the aircraft for the operations IAW FM 57-220/230.

(2) Remain secured with a safety harness or in a crew member seat (if installed) throughout the mission.

(3) Organize the parachutists and their exiting from the aircraft.

(4) Coordinate with medical personnel. Qualified medical personnel must be present on the ground prior to the start of jump operations.

(5) Manifest parachutists with the ground personnel.

(6) Confirm that all automatic opening devices are secured prior to takeoff and/or landing, as appropriate.

(7) Relay the PC's commands to the parachutists in the

event of an aircraft emergency.

(8) Immediately following the exit of the last parachutist, retrieve static lines and the D-bags. They will then be secured inside a kit bag until the aircraft has landed. The jump master will advise the FE/CE when all lines are secured. The static line snap hooks will not be removed from the anchor line until the aircraft has landed. In the event that the jump master exits the aircraft as the last jumper, the FE/CE will accomplish this task.

f. The DZSO will:

- (1) Survey the drop zone for suitability and hazards.
- (2) Maintain two-way radio communication with the aircraft.
- (3) Keep the PC and jump master advised of surface winds and drop zone status during the operation.

5. AIRCRAFT PREPARATION: Aircraft will be prepared IAW FM 57-220/230 and the unit SOP.

6. INSPECTION: Prior to the mission the jump master and the PC will conduct a joint inspection of the aircraft. They will ensure that:

- a. All loose objects in the cargo area are removed or secured.
- b. Sharp edges and tie down fitting wells on the cargo floor and door jambs (that could cut and/or fray static lines or snag the parachutists' equipment) are padded and taped, as required. Door catches and handles are not taped.
- c. Cargo doors (if applicable) are locked in the open position and cleared for closing, depending on mission requirements.
- d. The anchor line system is complete, serviceable, and properly installed.
- e. A headset/helmet and intercom jack for the jump master are available, operational, and the intercom extension cord is secured overhead.
- f. Safety harnesses and backpack type parachutes are available for the jump master and FE/CE, as required.

7. FLIGHT PROCEDURES/SAFETY:

- a. The UH-60 aircraft will not be used for static line parachute operations with the cargo doors removed.
- b. The jump master will wear a safety harness which will be secured to an appropriate fitting. He must also be equipped with a headset or flight helmet that allows direct communications with the aircraft crew.

c. Indicated airspeed of the aircraft during drops should not be:

- (1) UH-60 less than 65 knots or more than 75 knots.
- (2) CH-47 less than 80 knots or more than 110 knots.

d. Jump altitude will not be less than 1500 feet AGL.

e. For static line jumps, when the command of "standby" is given, the PC will ensure that the aircraft is in a positive climb of 100 to 300 FPM prior to the first jumper departing the aircraft. This climb will be maintained until the jump master calls "all static lines in." No aircraft turns will be made during this time.

f. Without detaching static lines, the jump master retrieves the static lines and D-bags, places them inside a kit bag, and secures the kit bag until the aircraft has landed. The static line snap hooks are then removed from the anchor line attaching points.

g. No static line jumps will be conducted with automatic opening reserve parachutes.

h. Flights above 10,000' pressure altitude will comply with oxygen requirements in AR 95-1.

8. EMERGENCY PROCEDURES:

a. Towed parachutist: The jump master will immediately alert the crewmembers and recover and store all other deployed static lines and deployment bags. Secure the towed parachutist by procedures established in the briefing. No attempt will be made to retrieve a towed parachutist. A towed parachutist will not be cut away unless and in-flight emergency precludes the aircraft coming to a hover prior to ground contact. After the parachutist is secured; the pilot reduces airspeed, slowly descends to the DZ or other appropriate site, and brings the aircraft to a high hover. Slowly descend from a hover until the parachutist is safely on the ground. The jump master will advise the pilot when the parachutist has reached the ground and provides maneuver instructions to keep the aircraft from landing on the parachutist. Once the aircraft and parachutist are safely on the ground, all paradrop operations will be halted until a full debrief has been completed.

b. Parachute inflation in the aircraft:

- (1) The jump master must monitor all parachutists to preclude this dangerous event from happening.
- (2) Every attempt will be made to contain the parachute inside the aircraft.
- (3) If the parachute cannot be contained inside the aircraft, the jump master and FE/CE will assist the parachutist

in exiting the aircraft to prevent injury to the parachutist and damage to the aircraft.

c. Emergency descents:

(1) In the event that the PC must make an emergency descent, the PC must notify the jump master and give him instructions. Let the parachutists exit if altitude, rate of descent, and time permit.

(2) If the decision is made that the parachutists remain on board, the jump master will:

(a) Have all parachutists fasten seat belts.

(b) Prepare parachutists for landing and unhook static lines.

(c) Ensure that automatic opening devices are safed.

(d) After landing, will control the orderly exit of parachutists.

(3) If the decision has been made to allow the parachutists to exit the aircraft while in flight, the jump master will:

(a) Control the exit of the parachutists to facilitate aircraft CG shift and control.

(b) Inform the PC after all parachutists have exited.

(c) Remind the FE/CE to pull in the parachute deployment bags after the jump master has exited, if applicable.

9. WEATHER REQUIREMENTS:

a. No paradrop operations will be initiated with a ceiling of less than 2000 feet. If operating in controlled airspace the ceiling and visibility must meet ICAO cloud clearance requirements.

b. No paradrop operation will be initiated in a cloud.

c. The maximum surface winds will be 13 knots and the maximum winds at altitude will be 30 knots.

10. MISSION PLANNING CHECKLIST:

a. Weather/winds at altitude/surface

b. Number of parachutists

c. Altitude, size, location of drop zone

d. Location and types of obstacles

e. Location of medical facilities

f. Type of paradrop (tactical, static line, free fall)

g. NOTAMs

h. Emergency procedures

i. Two-way communications

Appendix 5 (Paradrop Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

- j. Approval documentation for foreign nationals/military
- k. Aviation Life Support Equipment
- l. Safety harnesses

Appendix 6 (Rappelling Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

1. REFERENCES:

- a. AR 95-1
- b. UR 95-1
- c. FM 1-400
- d. FM 57-38
- e. TC 1-201
- f. TC 1-210
- g. TC 21-24
- h. Appropriate ATMs
- i. Aircraft Operator's Manual

2. PURPOSE: Establishes policies and procedures for the safe and successful accomplishment of rappelling missions. The primary reference is TC 21-24.

3. GENERAL: The aircrew will be familiar with the above references prior to conducting a rappelling mission. The aircrew will be qualified in rappelling operations by an IP/SP/SI/FI with appropriate entries on the crewmember's DA Form 7122-R. Qualification will consist of a minimum of one rappelling operation, day or night or NVG as required. The PC is responsible for the overall conduct and safety of rappelling operations. The rappel master (RM) is the technical expert. The aircrew is required to read this SOP prior to performing each mission. A normal crew consists of a PC, PI, CE, and a qualified and current RM.

4. RESPONSIBILITIES:

- a. The commander will:
 - (1) Integrate risk management techniques into the planning and execution of the mission.
 - (2) Assign rappel qualified crews or crewmembers who are receiving training from an SP, IP, SI, or FI. When rappel operations are not on the commander's task list of rappel qualified crew members, company commanders will conduct a detailed risk assessment, mitigate risks, and authorize rappel operations on the mission brief sheet.
- b. The standardization section will ensure:
 - (1) Unit instructors conduct qualification IAW the appropriate ATM and this SOP.

Appendix 6 (Rappelling Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

(2) Academic training includes standard terminology, hand signals, and crew coordination procedures IAW TC 21-24.

(3) Aircrew flight task proficiency in deceleration and high hover maneuvers prior to training with troops.

c. The PC will ensure:

(1) The aircrew is qualified, is familiar with, and complies with the above references and this appendix.

(2) The aircrew and rappel personnel have been briefed and understand responsibilities for the mission, safety, aircrew coordination, and emergency procedures.

(3) The aircraft is rigged IAW this appendix, TC 21-24, and current aircraft SOF messages.

(4) The aircraft/rappel equipment is inspected for serviceability, correct installation, completeness, and functionality IAW TC 21-24.

(5) A current PPC and 365-4 is computed, OGE power requirements and single engine capabilities are briefed.

(6) Hover checks are conducted to verify power available, aircraft controllability, and accuracy of radar altimeters.

d. The CE will:

(1) Ensure that the aircraft is in the proper mission configuration prior to pre-flight.

(2) Assist the PC as directed.

e. The supported unit commander will ensure rappellers meet the qualification criteria in TC 21-24 and will designate an RM. Supported units will provide all required safety equipment, coordinate medical personnel, provide a ground safety officer (GSO) and coordinate for the training area.

f. The RM will ensure:

(1) Compliance with rigging, inspection, and safety responsibilities for the aircraft and personnel IAW TC 21-24.

(2) Communication is maintained with the aircrew and ground safety personnel at all times.

g. The belay-man will:

(1) Ensure safety by controlling rappel descent.

(2) Walk the ropes from under the aircraft during the descent to prevent any slack.

(3) Never attempt to throw the rope away from the aircraft. If slack does occur, the rope will be held and the slack walked out from under the aircraft.

5. EQUIPMENT AND PERSONNEL REQUIREMENTS:

Appendix 6 (Rappelling Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

- a. Qualified RM, rappel safety officer, rappellers, and belayers IAW TC 21-24, and the aircrew.
- b. Qualified medical personnel with equipment and transportation. In their absence, training will be terminated.
- c. Headset or flight helmet provided for the RM.
- d. Safety harnesses provided for the CE and RM.
- e. A sharp knife secured in the cabin area during rappelling operations.
- f. Air to ground communication equipment and operator.
- g. All rappelling operations conducted with "double ropes."
- h. Hearing protection for all participants.

6. RIGGING OF AIRCRAFT (UH-60):

- a. Ensure cabin ceiling tie-downs have safety wire installed and the bolt head is stamped with the letter H.
- b. Remove the center row of seats from the cargo compartment.
- c. Clean all oil and grease from the cargo floor.
- d. Extend RM's intercom cord to the rear over the aft utility drain line and tape to the overhead troop seat support tube (or similar configuration).
- e. Lock both cargo doors in the fully open position. For long cold weather flights, they may remain closed until arrival.
- f. Pad and tape all sharp edges on the floor and door ledges. Install pads on the bottom ledge of the cargo door openings to prevent rappelling ropes from being cut, worn, or chaffed.
- g. Tape all unused floor rings.
- h. Remove and secure cargo hook access door and deploy hook in down position.
- i. Ensure safety harnesses or safety lines are available to secure the RM and CE inside the aircraft.
- j. The RM will rig the helicopter IAW TC 21-24 and applicable SOF messages, re-check primary/secondary anchor points and snap-link gate positions.

7. BEFORE TAKEOFF:

- a. The rappel personnel and the RM will sit restrained by safety belts on the floor or where designated by the PC. The

Appendix 6 (Rappelling Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

maximum number of rappel personnel is ten.

b. All rappellers must know the seating arrangements and loading procedures. Procedures must be rehearsed before conducting operations. Approaching the aircraft from the front must be avoided with blades turning.

c. The RM will secure his safety harness to one of the cargo tie down rings as appropriate.

d. The CE will secure his safety harness to one of the forward cargo tie down rings but should utilize the gunner seat during flight to the rappelling location.

8. RAPPELLING:

a. Extreme caution, situational awareness, and attention to detail must be maintained during all phases of rappel operations.

b. When cargo doors are closed during the enroute portion, caution must be exercised when opening the cargo doors. If allowed to slide back on their own, the stops may be sheared allowing the door to separate from the aircraft.

c. Upon arrival at the rappelling site, the aviator will maintain a stationary hover at an altitude applicable for the length of the rappel rope and as requested by the RM. About 20 feet of rope should remain on the ground.

d. The aviator not on the controls will assist by monitoring instruments, advising AGL altitude, lateral drift, and maintaining air-to-ground communications.

e. The RM will direct the sequence the rappel personnel exit the aircraft. Additionally, he will ensure never more than one person is on each rappel rope.

f. The CE and RM will:

(1) Maintain communications with the PC and advise as necessary.

(2) Deploy ropes and verify the ropes (approximately 20 feet) are touching the ground and they are not tangled.

(3) Release ropes only after visually ensuring, and receiving verification from the ground safety personnel, that all personnel are on the ground and clear from the aircraft.

(4) Ensure all ropes are jettisoned or retrieved and secured inside the cabin before the aviator resumes flight. The RM is the only person who will inform the PC to resume flight. The CE will verify that the aircraft is clear to perform flight.

g. The following rappel commands will be used (refer to TC

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21-24 for additional information):

COMMAND	DEFINITION
"20 MINUTES"	Target 20 minutes out
"10 MINUTES"	Target 10 minutes out
"5 MINUTES"	Target 5 minutes out
"1 MINUTE"	Target 1 minute out
"GET READY"	Final checks on all equipment
"THROW ROPES"	Stable hover, cleared below, ropes deployed and confirmed on ground
"POSITION"	Rappellers maneuver to ready position
"GO"	RM clears rappellers to rappel
"ALL RAPPELLERS AWAY"	All rappellers on the ground and clear, ropes will be recovered or released
"ROPES CLEAR LEFT/RIGHT"	Ropes are disconnected or recovered, aircraft cleared for flight

9. NVG CONSIDERATIONS:

- a. Tape a chemlight to the rope attachment point to aid in exiting the aircraft.
- b. Tape a chemlight at the end of the rope and another approximately twenty feet from the end. Ensure both chemlights are on the ground during rappel operations.
- c. Although not required, reflective tape or a chemlight attached to rappeller helmets will help ensure when they clear the aircraft.
- d. Rappelers will not wear NVGs during the descent.
- e. Pilots may desire light sources on the ground to assist them in maintaining a stabilized hover.
- f. NVG lighting criteria will be IAW DOD FLIP AP/2.

10. WEATHER REQUIREMENTS: FRIES training will not be conducted under the following conditions:

- a. Ceiling less than 1,000' AGL and visibility less than 5,000 meters.
- b. Wind 30 knots maximum or excessive gust spread.
- c. Ambient temperature of 32 degrees Fahrenheit or less.
- d. Lightning within 5 nautical miles.
- e. Brown/White out conditions.
- f. Rope exposed to elements; suspected reduction of tensile

strength (frozen, etc.).

g. Heavy rain, sleet or ice that would prevent a controlled descent.

11. EMERGENCY PROCEDURES:

a. In the event an individual is unable to complete his descent, the following action will be taken:

(1) If the rappelling rope is knotted or tangled below the individual, move the aircraft to a clear area and lower the individual to the ground. The RM/CE will release or cut the rope only when he sees the individual reach the ground as confirmed by the ground safety personnel.

(2) If the rope becomes entangled with the ground, and landing is not possible, the ropes will be cut or released. Every attempt will be made to allow the individual to reach the ground prior to cutting the ropes. A slight descent of the aircraft should aid the individual by removing some of the tension off the ropes.

b. If during the aircraft descent, slack in the rope forms on the ground, never attempt to throw the rope away from the aircraft. The loose rope will be drawn into the rotor system. The rope will be held and the slack walked out from under the aircraft.

c. If the rope leaves the ground, or in the event of unsafe drift, the rappellers will brake, lock in, and wait for the aircraft to maneuver back to a safe position.

d. If the aircraft has a partial or complete power failure the aviator should attempt to clear personnel prior to ground contact.

e. If pilots are forced to land, the aircraft will maneuver forward and down. Rappellers will expedite reaching the ground and move outward to the sides.

12. Safety Brief:

a. The RM briefs all personnel participating in rappel training. The safety briefing covers detailed instructions concerning the operation including the aircraft to be used, rappel area description, uniform, equipment, and emergency procedures. The safety briefing will include the following:

(1) Area hazards

Appendix 6 (Rappelling Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

(2) General aircraft safety and rotor blade avoidance
(3) Equipment associated with rappels and its characteristics

(4) Equipment inspection
(5) Method of insertion, length of rope, hover height
(6) Hand and arm signals/emergency signals
(7) Medical coverage
(8) Communication requirements, training will cease without required communication

(9) Night operation requirements if applicable
b. The AMC/PC will conduct the aircrew briefing. The AMC/PC and the RM will coordinate to ensure complete briefings are conducted. The aircrew briefing will include the following:

(1) Manifest check
(2) Mission brief
(3) Tactical situation
(4) Communications
(5) PZ location and description; PZ time
(6) Target location and description; target time
(7) Route description
(8) Ground operations and loading
(9) Approach heading and altitude
(10) Time warnings and checkpoints
(11) Rappel commands and signals
(12) Rehearsal:
 (a) Seating order
 (b) Rappel order
 (c) Wearing seat belts
 (d) Securing equipment
 (e) Hand and arm signals
 (f) Movement as directed
 (g) Releasing seat belts (rappellers remain secured at all times until cleared by RM to release seat belts)
 (h) Hand and arm signals
 (i) Positioning equipment
 (j) Exiting aircraft
(13) Emergency procedures
 (a) Enroute
 (b) PZ/Target
 (c) During fast rope operations
(14) Lock in procedures for unsafe drift or rope leaving ground

Appendix 7 (FRIES Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

1. REFERENCES:

- a. AR 95-1
- b. UR 95-1
- c. FM 57-38
- d. TC 1-201
- e. TC 1-210
- f. TC 21-24
- g. Appropriate ATMs
- h. Aircraft Operator's Manual
- i. USASOC Reg 350-6

2. PURPOSE: Establishes policies and procedures for the safe and successful accomplishment of Fast Rope Infiltration and Extraction System (FRIES) missions.

3. GENERAL: The aircrew will be familiar with the above references prior to conducting a FRIES mission. The aircrew will be qualified in FRIES operations by an IP/SP/SI/FI with appropriate entries on the crewmember's DA Form 7122-R. Qualification will consist of a minimum of one FRIES operation, day or night or NVG as required. The PC is responsible for the overall conduct and safety of FRIES operations. The FRIES master (FRM) is the technical expert. The aircrew is required to read this SOP prior to performing each mission. A normal crew consists of a PC, PI, CE, and a qualified and current FRM.

4. RESPONSIBILITIES:

- a. The commander will:
 - (1) Integrate risk management techniques into the planning and execution of the mission.
 - (2) Assign FRIES qualified crews or crewmembers who are receiving training from an SP, IP, SI, or FI. When FRIES operations are not on the individual's commander's task list of FRIES qualified crewmembers, company commanders will conduct a detailed risk assessment, mitigate risks, and authorize FRIES operations on the mission brief sheet.
- b. The standardization section will ensure:
 - (1) Unit instructors conduct qualification

Appendix 7 (FRIES Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

IAW the appropriate ATM and this SOP.

(2) Academic training includes standard terminology, hand signals, and crew coordination procedures IAW TC 21-24.

(3) Aircrew flight task proficiency in deceleration and high hover maneuvers prior to training with troops.

c. The PC will ensure:

(1) The aircrew is qualified, is familiar with, and complies with the above references and this appendix.

(2) The aircrew and fast rope personnel have been briefed and understand responsibilities for the mission, safety, aircrew coordination, and emergency procedures.

(3) The aircraft is rigged IAW this appendix, TC 21-24, and current aircraft AWR/SOF messages.

(4) The aircraft/FRIES equipment is inspected for serviceability, correct installation, completeness, and functionality.

(5) A current PPC and 365-4 is computed, OGE power requirements and single engine capabilities are briefed.

(6) Hover checks are conducted to verify power available, aircraft controllability, and accuracy of radar altimeters.

d. The CE will:

(1) Ensure that the aircraft is in the proper mission configuration prior to pre-flight.

(2) Assist the PC as directed.

e. The supported unit commander will ensure fast ropers meet the qualification criteria in USASOC Regulation 350-6 and TC 21-24 and will designate a FRM. Supported units will provide all required safety equipment, coordinate medical personnel, provide a Ground Safety Officer (GSO) and coordinate for the training area.

f. The FRM will ensure:

(1) Compliance with rigging, inspection, and safety responsibilities for the aircraft and personnel IAW TC 21-24.

(2) Communication is maintained with the aircrew and ground safety personnel at all times.

5. EQUIPMENT AND PERSONNEL REQUIREMENTS:

a. Qualified aircrew, FRM, FRIES Safeties, and FRIES Ropers

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IAW TC 21-24.

- b. Qualified medical personnel with equipment and transportation. In their absence, training will be terminated.
- c. Headset or flight helmet will be provided for the FRIES master.
- d. Safety harnesses will be provided for the CE and FRIES master.
- e. Air to ground communication equipment and operator.
- f. Hearing protection for all participants.

6. RIGGING OF AIRCRAFT (UH-60):

CAUTION

Army aircraft with FRIES mounts installed must have an AWR for FRIES

- a. Remove the center row of seats from the cargo compartment.
- b. Clean all oil and grease from the cargo floor.
- c. Extend the Fast Rope bar and insert quick release pin. Inspect the FRIES hardware for cracks, rust, and security of nuts, bolts, and quick release pins.
- d. Lock both cargo doors in the fully open position. For long cold weather flights, they may remain closed until arrival.
- e. Pad and tape all sharp edges on the floor and door ledges.
- f. Ensure safety harnesses or safety lines are available to secure the FRM and CE inside the aircraft.

7. BEFORE TAKEOFF:

- a. The FRIES personnel and the FRM will sit restrained by safety belts on the floor or where designated by the PC. The maximum number of FRIES personnel for training is eight.
- b. All ropers must know the seating arrangements and loading procedures. Procedures must be rehearsed before conducting operations. Approaching the aircraft from the front must be avoided with blades turning.

Appendix 7 (FRIES Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

c. The FRM will secure his safety harness to one of the aft cargo tie down rings.

d. The CE will secure his safety harness to one of the forward cargo tie down rings but should utilize the gunner's seat during flight to the FRIES location.

8. FRIES:

a. Extreme caution, situational awareness, and attention to detail must be maintained during all phases of FRIES operations.

b. When cargo doors are closed during the enroute portion, caution must be exercised when the doors are opened. If allowed to slide back on their own, the stops may be sheared allowing the door to separate from the aircraft.

c. Ropes will not be deployed until the aircraft is at a stabilized hover directly over the designated target and the PC commands "deploy ropes."

d. Ropes must be fully recovered or jettisoned prior to the aircraft departing.

e. The following FRIES commands will be used (refer to TC 21-24 for additional information):

COMMAND	DEFINITION
"10 MINUTES"	Target 10 minutes out
"6 MINUTES"	Target 6 minutes out
"1 MINUTE"	Target 1 minute out
"DEPLOY ROPES"	FRM informed aircraft over target and free to begin operations
"ROPES DEPLOYED"	Stable hover, cleared below, ropes deployed and confirmed on ground
"ROPERS OUT"	First roper exits the aircraft
"ALL ROPERS AWAY"	All ropers on the ground and clear, ropes will be recovered or released
"ROPES CLEAR LEFT/RIGHT"	Ropes are disconnected or recovered, aircraft cleared for flight

f. The maximum allowable load on any Fast Rope system is 1500 pounds.

g. Equipment lowering operations will comply with procedures and limitations in TC 21-24.

Appendix 7 (FRIES Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

h. The following safety restrictions will be adhered to during extraction training flights:

- (1) No more than three people (750 lbs) are to be extracted on a single rope.
- (2) A minimum of 100 feet separation will be maintained between extraction personnel and highest obstacles.
- (3) The aircraft will not exceed 70 knots or 30 degree bank angle.

9. NVG CONSIDERATIONS:

- a. Tape two chemlights at the end of the rope and another two above the extraction loops (about 15' from the end). Ensure all chemlights are on the ground during FRIES operations.
- b. Two chemlights are secured to the attachment point of the rope to aid in exit.
- c. Although not required, reflective tape or a chemlight attached to roper helmets will help ensure when they clear the aircraft.
- d. No night vision devices are worn during descent.
- e. Pilots may desire light sources on the ground to assist them in maintaining a stabilized hover.
- f. NVG lighting criteria will be IAW DOD FLIP AP/2.

10. WEATHER REQUIREMENTS: FRIES training will not be conducted under the following conditions:

- a. Ceiling less than 1,000'AGL, and visibility less than 5,000 meters.
- b. Wind 30 knots maximum or excessive gust spread.
- c. Ambient temperature of 32 degrees Fahrenheit or less.
- d. Lightning within 5 nautical miles.
- e. Brown/White out conditions.
- f. Rope exposed to elements; suspected reduction of tensile strength (frozen, etc.).
- g. Heavy rain, sleet or ice that would prevent a controlled descent.

11. EMERGENCY PROCEDURES:

- a. For an in-flight emergency, all personnel remain seated, secured, and follow aircrew instructions.
- b. During FRIES operations, signal to stop stick (cease FRIES operations), and ensure ropers are clear.
- c. For a hung rope when landing is not possible, ensure the ropes are clear then release them.
- d. If the rope leaves the ground, or in the event of unsafe drift, the ropers will brake, lock in, and wait for the aircraft to maneuver back to a safe position.
- d. If the aircraft has a partial or complete power failure the aviator should attempt to clear personnel prior to ground contact.
- e. If pilots are forced to land, the aircraft will maneuver forward and down. Ropers will expedite reaching the ground and move outward to the sides.

12. Safety Brief:

a. The FRM briefs all personnel participating in FRIES training. The safety briefing covers detailed instructions concerning the operation including the aircraft to be used, fast rope area description, uniform, equipment, and emergency procedures. The safety briefing will include the following:

- (1) Area hazards
- (2) General aircraft safety and rotor blade avoidance
- (3) Equipment associated with FRIES and its characteristics
- (4) Equipment inspection
- (5) Method of insertion/extraction, length of rope, hover height
- (6) Hand and arm signals/emergency signals
- (7) Medical coverage
- (8) Communication requirements, training will cease without required communication
- (9) Night operation requirements if applicable

b. The AMC/PC will conduct the aircrew briefing. The AMC/PC and the FRM will coordinate to ensure complete briefings are conducted. The aircrew briefing will include the following:

- (1) Manifest check
- (2) Mission brief
- (3) Tactical situation
- (4) Communications
- (5) PZ location and description; PZ time
- (6) Target location and description; target time
- (7) Route description
- (8) Ground operations and loading

- (9) Approach heading and altitude
- (10) Time warnings and checkpoints
- (11) Fast Rope commands and signals
- (12) Rehearsal:
 - (a) Seating order
 - (b) Fast Rope order
 - (c) Wearing seat belts
 - (d) Securing equipment
 - (e) Hand and arm signals
 - (f) Movement as directed
 - (g) Releasing seat belts (ropers remain secured at all times until cleared by FRM to release seat belts)
 - (h) Hand and arm signals
 - (i) Positioning equipment
 - (j) Exiting aircraft
- (13) Emergency procedures
 - (a) Enroute
 - (b) PZ/Target
 - (c) During fast rope operations
- (14) Lock in procedures for unsafe drift or rope leaving ground

Appendix 8 (Helo-Cast and Recovery Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

1. REFERENCES:

- a. TC 21-21
- b. TC 31-25
- c. SOCOM Reg 350-6

2. PURPOSE: To standardize procedures for conducting helo-cast operations among V Corps units and to provide instruction, guidance, and outline responsibilities for all personnel conducting helo-cast operations.

3. RESPONSIBILITIES:

- a. The Operations Officer:
 - (1) Will not accept a mission unless the following is verified:
 - (a) Unit to be cast has conducted recent instruction for helo-casting procedures.
 - (b) The aviation unit has a current copy of the supported unit's helo-cast SOP and can comply with all ground support equipment requirements (e.g. radios, boats, marker buoys, panels, and LPUs).
 - (c) That the proposed drop zone has been surveyed for submerged objects and certified by a U.S. military SCUBA diver.
 - (d) That day helo-cast training missions will not commence prior to official sunrise and will terminate one hour prior to official sunset.
 - (2) Will ensure that the unit has obtained all required authorization documents to conduct the mission.
 - (3) Will implement the aviation risk assessment process during the planning stage of the mission.
- b. The Commander: Will ensure that the aircrew assigned to the mission is knowledgeable of helo-cast operations, has previously performed this mission, or is undergoing instruction by an UT, IP, or SP.
- c. The Supported Unit will:
 - (1) Brief troops on exit procedures immediately after the aircrew conducts the aircraft safety briefing.
 - (2) Furnish a safety officer/NCO and a cast master for each aircraft executing drops.
- d. The PC will:
 - (1) Ensure that weight and balance and Performance Planning has been computed for the planned loads and conditions for the mission.

Appendix 8 (Helo-Cast and Recovery Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

(2) Ensure that the crew members have completed their mission preparations prior to departure for the PZ.

(3) Plan the route of flight and refueling stops to allow the aircraft to arrive at the PZ with a maximum load of fuel.

(4) Upon initially arriving at the PZ, shut down the aircraft and accomplish the following:

(a) Contact the commander of troops and the cast master.

(b) Verify that personnel to jump have received prior instruction for helo-cast operations.

(c) Verify cast master is knowledgeable of helo-cast operations and familiar with the aircraft.

(d) Ensure that a passenger manifest is maintained by the supported unit for all lifts and back hauls.

(e) Verify that the DZ safety officer/NCO has an FM communication capability at the DZ.

(f) Ensure that red and green panel markers are on hand as backup communication for indicating the DZ is clear or not clear for drops. Smoke may be used as an alternate means of communication.

e. CEs will:

(1) Ensure that the required number of headsets and restraining harnesses for the mission are on board prior to departure for the PZ.

(2) Ensure that all communication stations are operational prior to departure for the PZ.

(3) Ensure that the cabin floor area is free of all liquids and grease.

(4) Stow and tie down all loose equipment.

(5) Tape any sharp edges or protrusions that may come into contact with the helocasters.

(6) Ensure that the aircraft wipers are operational.

f. The Cast Master will:

(1) Advise the aircrew of the following:

(a) DZ Safety Officer frequencies and call signs.

(b) Height above water and airspeed for drops (20 feet and 20 knots will never be exceeded).

(c) "Time to Drop" warnings as required.

(d) Number of lifts and number of passes per lift.

(e) Weak swimmers.

(2) Perform a safety check of the swimmers, paying particular attention to their flotation devices. Swimmers' equipment will be checked to ensure that it is properly positioned and functional so as to prevent any malfunction or injury upon exit of the aircraft or contact with the water.

Appendix 8 (Helo-Cast and Recovery Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

(3) Assign buddy teams and ensure that all swimmers are seated in stick order.

(4) Cast the swimmers only if the aircraft is correctly aligned and safely within the limits of speed and altitude.

4. **BEFORE TAKEOFF:** The Safety Officer/NCO and cast master will inspect the aircraft for proper rigging and check the inflation of the Zodiac boat keel, if used.

5. **HELO-CAST OPERATIONS:**

a. Upon arrival at the drop zone the aviator will execute a progressive descent and deceleration to terminate within the cast area at an altitude of 10 feet and a ground speed of 10 knots.

b. The pilot not on the controls will call out altitude and airspeed in that order. The Doppler/GPS will be utilized to maintain the proper ground speed.

c. The following Helo-cast commands will be used:

COMMAND	DEFINITION
"10 minutes"	Target is 10 minutes out.
"6 minutes"	Target is 6 minutes out.
"1 minute"	Target is one minute out.
	Release door safety strap.
"30 seconds"	Move into position with equipment.
"Mark"	Within target area, clear to cast.
"Swimmers away"	First swimmer exiting the A/C.
"Swimmers clear"	Termination of casting.
"Abort"	Terminate casting

d. After the cast the pilot will radio the safety boat with the number of swimmers deployed. The safety boat will radio the aircraft after all of the swimmers have been accounted for. The safety boat(s) will remain parallel and 50 meters to the left or right of the aircraft's line of flight.

Appendix 8 (Helo-Cast and Recovery Operations) to ANNEX G (Training and Standardization - External) to the CASSD SOP

NOTE

Avoid excessive aft cyclic movements at or below 15 feet AGL to preclude dunking the tail wheel(s) into the water.

6. **NIGHT OPERATIONS:** Extreme care will be exercised during NVG helocast operations as field of vision of all participants is restricted. Helocast personnel will have chemlights attached to themselves to be used as a reference and accountability. The approach phase at night should be a multi-ship operation. The lead aircraft will approach the target area and drop chemlights on the first pass. This will give the casting aircraft a visual reference for the cast start and termination point. If single ship the safety boats must mark the drop zone with chemlights. Each safety boat must have visual lights attached for safety.

7. **RECOVERY OPERATIONS:**

a. When using a single rotor aircraft, lower a wire ladder to the swimmers who are on-line at 50-meter intervals in the casting area. At night each swimmer attaches an IR chemlight on top of his head to facilitate pick-up.

b. As the aircraft flies over the divers, the swimmers hook the lowest rung on the ladder with their leading arm and climb to a designated height where they hook up (with snap link and rope seat) to the ladder. When using a CH-47, land in the water. Do not land in salt water during training operations.

c. When recovering only swimmers, they either go up a ladder or, if the aircraft is on the water, they simply swim up the ramp.

8. **SAFETY:**

WARNING

Pilot visibility can be restricted by water spray. The pilot not on the controls will be ready to turn on the windshield wipers on command. Windshield wipers must be operational to perform the mission.

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a. A safety briefing will be conducted by the PC or one of the crew members for all individuals involved.

b. At no time during the drop portion of the helo-casting operation will the aircraft altitude exceed 20 feet or the ground speed exceed 20 knots.

c. Aircraft crew members and the cast master will wear the appropriate over water safety equipment.

d. All surface vessels will be avoided. Fishing vessels pose a bird strike hazard, large ships pose a HIRTA hazard, sailboats masts are difficult to detect, and aircraft rotor wash may be hazardous to small boats.

e. Ensure that motorized safety boats are in the water with motors running to conduct helo-casting and recovery operations.

f. Ensure water depth is no less than 15 feet.

1. REFERENCES:

- a. AR 95-1
- b. AR 385-95
- c. FM 1-301
- d. TC 1-210

2. PURPOSE: To provide a uniform fighter management policy for planning and execution which prescribes the duty and endurance requirements necessary to maintain war fighting effectiveness.

3. APPLICABILITY:

- a. This appendix applies to aircrew members and non-flight personnel associated with the operation and maintenance of V Corps aircraft and ground support equipment.
- b. This appendix does not apply to Air Ambulance units. Commanders of these units will develop, implement and maintain a crew endurance program commensurate with the MEDEVAC mission.

4. DEFINITIONS:

- a. Fighter management: Management of human resources to maximize combat effectiveness. It is a program used to control risks due to sleep deprivation or fatigue and to prescribe thresholds to trigger command decisions related to those risks. The terms fighter management and crew endurance are synonymous.
- b. Aircrew member: Rated and nonrated (crewmember and noncrewmember) personnel authorized to perform flight duties IAW AR 95-1, AR 600-105, and AR 600-106.
- c. Non-flight personnel: Personnel who perform, or directly supervise hands-on aircraft maintenance and/or armament/POL servicing.
- d. Duty: Performance of military obligations and related functions such as stand-to formations, physical training, briefings, preflight, mission planning, maintenance, etc.
- e. Duty period: The period between reporting for duty and release from duty. The duty period begins when the soldier reports for military duty and ends when the soldier has completed all job-related tasks and is released from duty to individually manage their own time. If excessive travel time is involved to and/or from place of duty (as determined by the commander) it should be factored into the duty

Appendix 9 (Fighter Management) to ANNEX G (Training and Standardization - External) to the CASSD SOP

period.

f. Rest period: Off-duty personal time, with no interruptions, which precedes or follows a duty period. The rest period begins when the soldier has completed all job-related tasks associated with the mission and has been released from duty to individually manage their time. If a period of interruption occurs during sleep, a new rest period is started at the end of the interruption. A period of interruption occurs when an individual is required to perform duty. A brief phone call or a momentary awakening is not considered an interruption.

g. Reverse cycle: A duty cycle that interrupts the normal circadian rhythm. Reverse cycle occurs when an individual is required to alter the duty period by six or more hours, for 3 or more duty periods.

5. GENERAL:

a. The basic limits specified herein, without extensions, are mandatory limits beyond which safe mission accomplishment may be compromised.

b. The following table will be used for mission planning and execution to monitor aircrew member resources. It is important to realize that duty and rest periods have no relation to a 24-hour period. Example: Personnel who are assigned 10 hours of duty and provided 10 hours of rest may begin another duty period. Additionally, personnel may be extended to 16 hours of duty and then provided 10 hours of rest. Both examples complete a duty, rest cycle, however, neither completes a duty, rest cycle in a 24-hour period.

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FLIGHT / DUTY HOUR MAXIMUMS		
TIME PERIOD	DUTY PERIOD	DA FORM 2408-12 HOURS
1-14 DAYS	12 HOURS	8 HOURS - DAY (SR TO SS) OR 6 HOURS* - ANY COMBINATION DAY, NIGHT, NVDs, HOOD, WEATHER, or MOPP 3/4 (Fixed-wing - 8hrs any combination) 5 HOURS - WITH NVDs 3 HOURS - MOPP 3 OR 4
14 DAYS	168 HOURS	74 FLIGHT HOURS
30 DAYS	360 HOURS	90 FLIGHT HOURS
* Examples: Fly 1 hr day and then the max allowable for NVD of 5 hrs; Fly the max of 3 hrs MOPP 3, then 1 hr Day, 1 hr Hood, 1 hr NVD.		

TABLE 9-1

c. Missions should not be planned to exceed Table 9-1 flight and duty hour maximums. If it is determined that aircrew(s) cannot accomplish the mission within the limits, then a contingency plan will be formulated for crew exchange during the execution of the mission. When crew exchange interferes with mission accomplishment, the first Colonel (O6) in the aviation chain-of-command may pre-approve missions that exceed Table 9-1 flight and duty hour maximums. This authority may not be delegated. During execution, if the planned mission will exceed Table 9-1 maximum values, the senior on-site aviation commander will assess the involved aircrew's ability to execute the mission and apply the extension guidelines in paragraph 6 as appropriate.

d. A 10-hour rest period will be provided for aircrew members prior to beginning a new duty period. This rest period may be reduced to 8 hours for no more than two consecutive days by Battalion/Squadron/Aviation Task Force Commanders occupying O5 positions or above. An 8-hour rest

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period will be provided for non-flight personnel prior to beginning a new duty period. This rest period may not be reduced.

e. Aircrew members will be provided a 20-hour rest period prior to beginning consecutive multiple night operations or a reverse cycle. For subsequent duty periods personnel will comply with the rest period described in paragraph 5d above (e.g. End duty Monday at 1700hrs, may begin duty at 1300hrs Tuesday for reverse cycle, then upon completion have at least 10hrs rest before beginning another duty period).

f. Aircrew members performing 24-hour duties (e.g. SDO, SDNCO, CQ, or any similar duties) will be provided a 20-hour rest period prior to beginning a new duty period that involves the performance of flight duties.

g. When 14 consecutive periods of duty are performed, or if 14-day duty or flight hour limits are reached, a 24-hour rest period is required. When 30-day duty or flight hour limits are reached, a 48-hour rest period is required. Any 24-hour rest period within 14 days, or 48-hour rest period within 30 days will reset the duty day time clock.

h. The requirement for tracking fighter management in garrison is left to the discretion of unit commanders. Fighter management tracking is mandatory when conducting operations in other than garrison environments; the method used is up to the discretion of the commander.

i. Commanders will plan adequate time for personnel to adjust when transiting time zones or operating in adverse environmental areas. The commander in consultation with a flight surgeon will determine readjustment times.

j. Aircrew members will:

(1) Be restricted from operating an aircraft within two hours of concluding physical training.

(2) Be restricted from flight duties for a minimum of two hours after unprotected exposure to riot control agents and/or until all residual effects have worn off, whichever is later.

(3) Be responsible for knowing their individual duty and flight time status at all times in relation to Table 9-1 of this appendix.

(4) Immediately notify and consult with their chain of command when it becomes apparent that fighter management limits could be exceeded. The length of a mission and anticipated delays should be considered.

(5) Immediately notify and consult with their chain of command at any time when they believe their physical or mental fatigue is approaching a point that may compromise safety.

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(6) If "simulator sickness" is experienced notify the commander and be restricted from crewmember duties until all symptoms subside.

6. Extension authority: Extension of duty period and flight hour limits is authorized on an individual (excluding O6 provision in para 5c) "case-by-case" basis. Blanket extensions are not authorized. Commanders must apply sound risk management principles when making extension decisions. Extension authorities are as follows:

a. Company/Troop/Detachment commander: +2 duty hours, not to exceed 14 hours total duty day; +1 additional flight hour above the maximums listed in Table 9-1 during a duty period.

b. Battalion/Squadron/Aviation Task Force Commanders, occupying O5 positions or above, may extend the duty day up to +4 hours above the maximum listed in Table 9-1, not to exceed 16 hours total duty day; and +2 flight hours above the maximums listed in Table 9-1 during a duty period.

c. The first Colonel (O6) or above in the chain of command may extend individuals beyond 16 duty hours and authorize additional flight hours as necessary. (May be delegated, in writing if possible, to the first commander occupying an O5 position or above for a specified mission period).

Appendix 10 (Helicopter Flight Coordination Area) to ANNEX G
(Training and Standardization - External) to the CASSD SOP

1. REFERENCES:

- a. AR 95-1
- b. AR 385-95
- c. UR 95-1
- d. UR 350-22
- e. DOD FLIP
- f. Military Aeronautical Information Publication Germany (AIP)
- g. Letters of Agreement with Hessen, Rheinland-Pfalz, Bavaria, and Baden-Wurttemberg

2. PURPOSE: To regulate the establishment, control, and utilization of the U.S. Army V Corps Helicopter Flight Coordination Areas (HFCAs) listed in enclosure 1. These procedures do not supersede requirements to aviation operations as outlined in the above references. Unless otherwise specified, pilot procedures herein also apply to the German HFCAs.

3. GENERAL:

a. The V Corps HFCAs have been established to conduct safe day and night terrain flight training. Day operations are below 100 feet AGL and night operations are below 500 feet AGL. They are only permitted during times specified in the DOD FLIP AP/2.

b. HFCA tenant unit requests have priority over non-tenant unit requests when being considered for the same training areas. The requesting unit is locked into a training area within 48 hours of their approved training time.

c. Non-Tenant Request Procedures:

(1) Unit will provide the information listed in enclosure 2 to the controlling agency.

(2) Individual flights will ensure the owning controlling agency receives the request no later than 12 hours before the proposed terrain flight training.

(3) Company sized units or larger can be requested up to 4 weeks in advance and should be scheduled no later than 1 week in advance.

(4) Non-tenant users of HFCAs will telephonically contact the controlling agency not later than 12 hours prior to entry. The user will confirm current wire hazards update, NOSUMs, and potential traffic conflicts.

4. RESPONSIBILITIES:

a. The V Corps G-3 Aviation Office will:

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- (1) Designate controlling agencies for each V Corps HFCA.
- (2) Ensure that controlling agencies:
 - (a) Establish HFCA SOPs for terrain flight training in their areas.
 - (b) Maintain current hazards maps that show the latest changes.
 - (c) Approve flights in their areas.
 - (d) Monitor HFCA utilization.
- b. Controlling agencies for each V Corps HFCA will:
 - (1) Establish an HFCA SOP and provide subsequent changes to users. As a minimum, the SOP will include the items in enclosure 3.
 - (2) Request maneuver rights for HFCA helicopter landing sites IAW UR 350-22. Submit requests to V Corps G-5 Maneuver Management, DSN 370-5514, g5move@hq.c5.army.mil. Respond to noise complaints and ensure alleged maneuver damage claims are responded to and processed by the appropriate agency.
 - (3) Provide a single POC to schedule and coordinate use of the HFCA. Maintain an HFCA master traffic log.
 - (4) Establish a method in the planning area to advise tenant HFCA users of intended overflights by transit aircraft.
 - (5) Submit requests for HFCA NOSUMs through AFOD.
 - (6) Establish a Master Hazards Map (MHM) (1:50,000 scale) of the entire area. The MHM will display the statement: "ALL ROADS AND RAILROADS ARE CONSIDERED TO HAVE WIRES." Restricted/no fly areas will be graphically depicted by red slashed circles or boxes. Hospitals, health spas, nuclear power plants, and HIRTA sites are no fly areas.
 - (7) Depict established NOE routes or NOE boxes. An NOE box is an area with well-defined boundaries established for ATM tactical maneuver training e.g. a ten by fifteen kilometer area established to conduct missions such as zone reconnaissance.
 - (8) Maintain only one MHM, ensure currency/accuracy, and ensure it is located in an area accessible to aircrews for flight planning purposes. A duplicate hazards map may be established at alternate locations when it would pose a hardship in day-to-day operations to reference the MHM, provided a policy is in place to ensure its accuracy and currency. A method will be established for ensuring that new hazards identified by HFCA users are reported, the MHM and duplicate if applicable are updated, and subsequent users are informed.
 - (9) Ensure the hazards depicted on the MHM are confirmed at least annually for the entire HFCA. The hazards depicted along established NOE routes or within NOE boxes will be confirmed at

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least semi-annually. A day hazards reconnaissance will be conducted no earlier than 72 hours prior to night operations (work week) or 120 hours prior (over a weekend) when utilizing infrequently used areas of the HFCA or when conducting exercises outside of the HFCA.

c. Aviation unit commanders conducting operations within an HFCA:

(1) Will establish a rotary wing terrain flight-training program according to TC 1-210, the appropriate ATM, the unit's METL, and this appendix.

(2) Will specify authorization to perform unit missions at terrain flight altitudes in the mission briefing.

(3) May designate tactical terrain flight missions with flight under wires or bridges.

(a) Flights will comply with procedures in DOD FLIP AP/2 and the aircraft ATM.

(b) Bridge spans must be at least 50 feet wider than the rotor diameter and meet the clearance requirements for under-wire flight as specified in the appropriate ATM.

(4) Will implement noise abatement procedures during planning and execution of training.

(5) Will ensure two qualified aviators conduct terrain flight. For OH-58D-equipped units, the commander may authorize day-only single-pilot terrain flight with the CPO cyclic in the locked-out position.

d. Pilots will:

(1) Comply with procedures, operating times, weather requirements specified in the UR 95-1, local flying rules, DOD FLIP, and this appendix.

(2) Review the appropriate Master Hazards Map, CALF, CHAD-GER and NOSUMs prior to flying within the HFCA and ensure the most current hazard information is posted on the aircrew's navigation map. A 1:50,000 or 1:100,000 map is required for HFCA flight below 200 feet AHO.

(3) Conduct a thorough flight route map reconnaissance noting published hazards. Enclosures 4 and 5 list boundaries and HFCA map sheets.

(4) Conduct a thorough aircrew brief that emphasizes aircrew coordination for hazard avoidance and sequence and timing of key events. Brief those portions of the mission where increased risk demands increased situational awareness and crewmembers avoid non-task related conversation (sterile cockpit environment).

(5) Avoid air-defense sites by 500 feet horizontally and vertically.

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(6) Not fly directly over autobahns, major roads, railways, and areas where large numbers of people assemble. Avoid hover operations where damage may occur (crops, tree tops, man made structures, etc.).

(7) Not fly over designated protected areas and other areas that may be hazardous for low flying.

(8) Not interfere with local airport traffic patterns, regardless of whether a protection zone has been depicted.

(9) Avoid protected and restricted areas depicted on the transit flying charts during mission planning and flight.

(10) Not fly under wires or bridges within towns or where wires or bridges cross roads or railroads.

(11) Provide new hazard update information found during operations in the HFCA to the controlling agency for posting to the Master Hazards Map.

(12) Ensure a day hazards reconnaissance is conducted no earlier than 72 hours prior to night operations (work week) or 120 hours prior (over a weekend) when utilizing infrequently used areas of the HFCA or when conducting exercises outside of the HFCA.

(13) Comply with transition procedures outlined in this appendix when applicable.

5. HFCA FLIGHT PROCEDURES:

a. Aircraft may enter and exit at any point unless otherwise stated in the HFCA SOP.

b. The minimum NOE/Contour enroute altitude on routes/boxes is 10 feet AGL during day operations and 100 feet AGL during NVD operations. Exceptions include operations at designated landing sites listed in the appropriate HFCA SOP and during performance of ATM tasks whose conditions specify lower altitudes.

c. Single and multi-aircraft NOE operations are authorized. No more than two aircraft may use a route at the same time. Formation flights or multi-aircraft operations under the control of an Air Mission Commander (AMC) will be considered one aircraft. Battle drills and multi-aircraft operations will avoid populated areas.

d. Landings other than emergencies are authorized only at designated landing sites listed in the appropriate HFCA SOP. Shutting down the aircraft is prohibited except during emergencies or scheduled field-training exercises.

e. Night and NVD operations:

(1) During NVD operations, preface the aircraft call sign with "goggle" when flight following.

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(2) Refer to the DOD FLIP AP/2 for minimum aircraft lighting requirements.

6. HFCA COMMO PROCEDURES:

a. Users of HFCAs will flight follow in accordance with the controlling agency SOP and report prior to entry.

b. Initial contact information will include: callsign, number and type of aircraft, entry point, destination, number of personnel on board, fuel remaining, and any changes or additional requests.

c. In the event of an aircraft experiencing lost communications with the flight following agency, cease training and re-establish contact to preclude unwarranted search and rescue operations.

d. Users will also monitor the appropriate air-to-air frequencies for that sector. In the event of multi-ship operations, at least one member of the flight will monitor the air-to-air frequency.

e. Aircraft on the same route must establish and maintain radio contact with each other.

7. HFCA TRANSITION PROCEDURES: NVD flights at and above 500 feet AGL are prohibited within the German Class G airspace structure. The control measures below are established to enable safe over flight of HFCAs by transit aircraft while using NVDs.

a. Prior to over flight by transit aircraft, the controlling agency of each affected HFCA will be contacted telephonically as soon as practicable to verify:

(1) Time of over flight, direction of travel, and confirmation of flight following frequency.

(2) Approximate route defined by at least two MGRS, four digit grid coordinates at the HFCA entry and exit points.

b. Transit aircraft will remain below, but as close to 500 feet AGL as the situation permits and yield to terrain flight aircraft to optimize separation.

c. Aircraft will transition via the most direct route while avoiding:

(1) HIRTA sites listed in the AP/2, special use airspace, built up and no-fly areas.

(2) Controlled airspace (except at destination aerodromes as permitted IAW the AP/2).

(3) All airfields and corresponding controlled airspace unless the destination.

d. Aircraft lighting will conform with UR 95-1.

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- e. Radio call requirements are detailed below:
 - (1) HFCA entry - callsign, number of aircraft, aircraft type, entry point, direction of flight, and exit point.
 - (2) HFCA exit - callsign, exit point, and intentions.
- f. Niederstetten and Roth HFCAs require similar coordination at least an hour prior; refer to the DOD FLIP Enroute Supplement for phone numbers. Although not required, it's recommended this coordination be accomplished through AFOD. Transition through German HFCAs is authorized when they close early. Self announce intentions on the appropriate frequency.
- g. The Victory HFCA is inactive for the purpose of non-tenant, terrain flight operations. Transiting Victory airspace is authorized without contacting the controlling agency.
- h. Aircrews desiring to perform additional training operations, or operate at a lower transition altitude within the HFCA structure, may do so only after proper coordination with the controlling agency.

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<u>HFCA</u>	<u>CONTROLLING AGENCY</u>	<u>TENANT UNITS</u>
CMTC	CMTC, 7TH ATC POC: Hohenfels Army Heliport Operations at DSN 466-2614	CMTC UNITS IN ROTATION
Eagle	4TH BDE, 1 ID POC: Ansbach AHP Operations DSN 467-2872/2739 ansbachahp@cmtymail.98asg.army.mil	4th BDE/1 ID 45th MED CO
Griffin	421 st Medical Battalion POC: Wiesbaden Base Operations DSN 337-5115/5662 airfield@221bsb.wiesbaden.army.mil	All units at WAAF
Ironeagle	4TH BDE, 1AD POC: 4th BDE S-3 Training DSN 322-7442 4bdes3trng@4thbdehq.1ad.army.mil	4th BDE/1AD
Lifesaver	236TH MED CO POC: Landstuhl AHP Operations DSN 486-7800/8331 236xo@cmtymail.26asg.army.mil	236TH MED CO
Skyhawk	BK FLT DET, 2-501st, 1AD POC: Bad Kreuznach Army Heliport DSN 490-7049/7173	FLT DET
Talon North and Talon South	11TH AVN REGT POC: Base Operations DSN 467-4502 illops@cmtymail.98asg.army.mil	11TH AVN REGT 7-159TH AVN REGT
Texas	12TH AVN BDE POC: Giebelstadt Army Airfield Operations at DSN 352-7454/7323 dispatcha@cmtymail.98asg.army.mil	All units at Giebelstadt 1-4 CAV, 1 ID
Victory (Inactive)	HQ, V Corps POC: CASSD Operations at DSN 322-7741/7739	NONE

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DEPARTMENT OF THE ARMY
ORGANIZATION NAME
UNIT or CMR
APO AE ZIP CODE

OFFICE SYMBOL (MARKS NUMBER)

Date of Request

MEMORANDUM FOR:

SUBJECT: Request to use HFCA _____.

1. MISSION NUMBER:
2. DATE/TIME:
3. REQUESTING UNIT:
4. MISSION:
5. NUMBER AND TYPE AIRCRAFT:
6. HFCA SECTORS DESIRED:
7. START POINT:
8. ARRIVAL TIME:
9. ROUTE OF FLIGHT:
10. END OF MISSION TIME:
11. HFCA HAZARDS UPDATE NUMBER:
12. UNIT POC AND DSN/DBP#:
13. COORDINATING UNIT POC:
14. OTHER INFORMATION:

SIGNATURE BLOCK

CHANGE 2

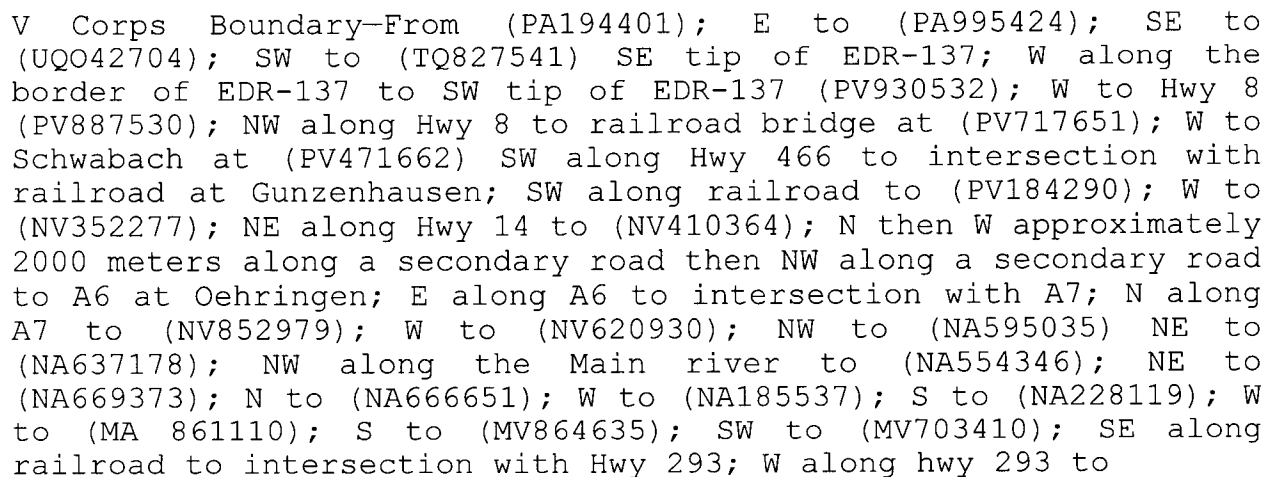
Enclosure 2

Appendix 10 (Helicopter Flight Coordination Area) to ANNEX G
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HFCA CONTROLLING AGENCY SOP REQUIREMENTS

1. General
 - a. Scope
 - b. Responsibilities
2. HFCA Description
 - a. Boundaries
 - b. Routes/boxes
 - c. Landing sites
 - d. MHM update procedures
3. Procedures
 - a. Day
 - b. Night/Night Vision Device.
 - (1) Authorized training times
 - (2) Coordination
 - (3) Training area saturation
 - (4) Safety
 - (5) Control
 - (6) Flight following
 - (7) Noise control and restricted areas
4. Miscellaneous
5. Appendixes

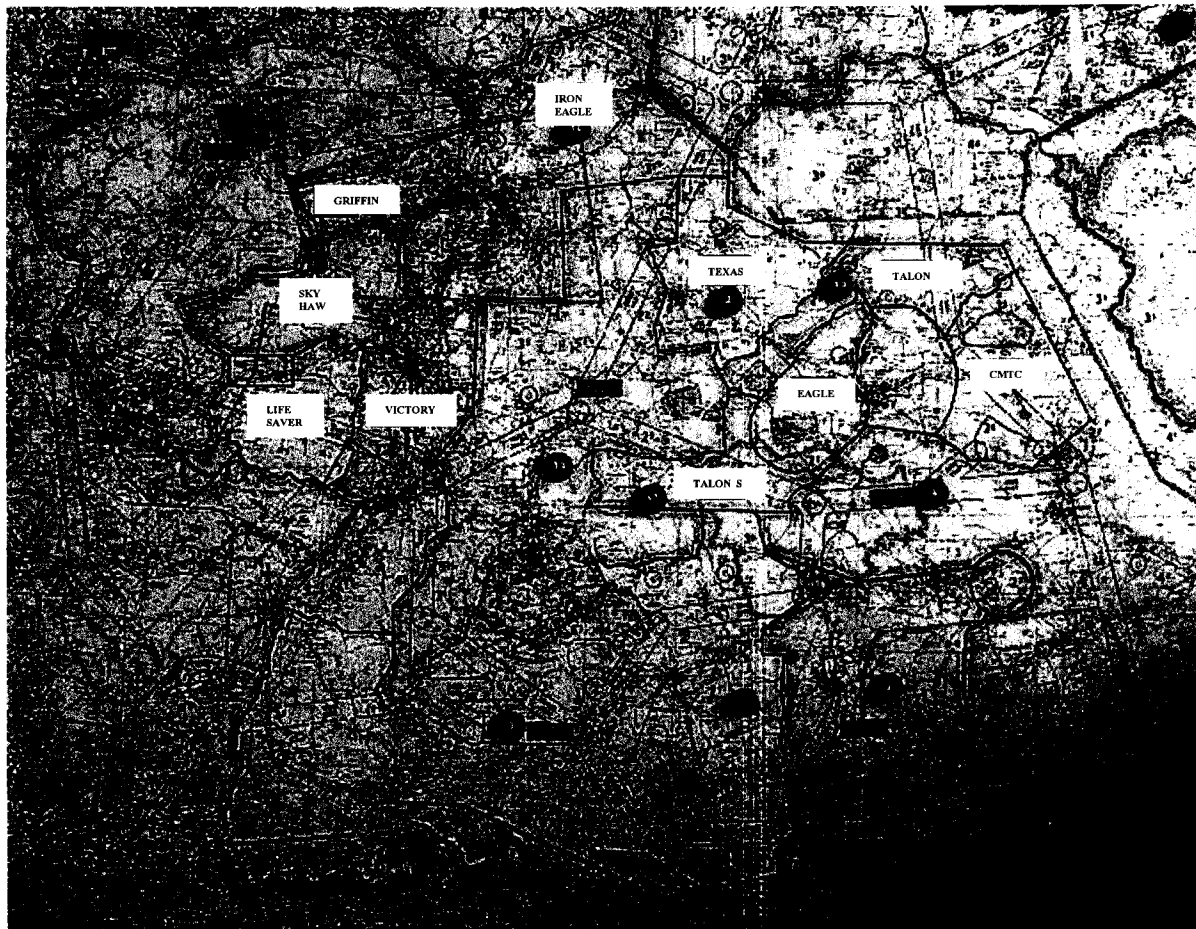
 U.S. ARMY HFCA PERIMETER
 OTHER HFCAs



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intersection with Hwy 10 (MV656282); W along Hwy 10 to railroad bridge at (MV558278); SW along railroad to (MV474209); S along secondary road to the French Border at (MV414232) NE then NW along French Border to intersection with Hwy 38 at (MV237330); W along the French Border to (LV822483); N along Hwy 424 to intersection with A8; N along A8 to intersection with Hwy 423; N along Hwy 423 to intersection with Hwy 40; NW along Hwy 40 to SW boundary of Ramstein control zone (LV859709); North along western boundary of Ramstein control zone to the NW corner; NW to EDR-116 boundary at (LV822483); NW then NE along EDR116 western boundary to (LA773068); NE along railroad to Pferdsfeld control zone; E along boundary of Pferdsfeld control zone to (MA131190); N along power lines to intersection with power lines at (MA141339); E along a secondary road to the town of Bingen (MA201355) NW along the Rhein river to (MA096543); NE to (MA465616); E along Hwy 275 to intersection with A5; N then NE along A5 to intersection with Hwy 324 (NB413395); NE to Deconfliction Zone Boundary (NB567431); S then SE along Deconfliction Zone Boundary to (NA863752) ; S to NA870524; SE to PA194401

V CORPS HFCA's



V CORPS HFCA COORDINATES

1. HFCA CMTC (7th ATC)

a. Map Sheets:

(1) 1:50,000: L6134, L6136, L6138, L6334, L6336, L6338, L6532, L6534, L6536, L6538, L6540, L6732, L6734, L6736, L6738, L6936, and L6938.

(2) 1:100,000: C6334, C6338, C6734, C6738, C7134, and C7138.

(3) TFC 1:250,000: NM 32-9 Nürnberg and NM 33-7 Plzen.

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b. From SE tip of EDR-137 (QV176520) NE to (UQ042704); NW to (QA050324); SW along railroad track to Pegnitz; SW along Hwy 85 to intersection with A9; SW along A9 to the Nürnberg Class "E" airspace boundary; S along Nürnberg Class "E" airspace boundary to intersection with Hwy 8; SE along Hwy 8 to (PV887530); E to SW tip of EDR-137; E along the border of EDR-137 to SE tip (QV176520).

2. HFCA Eagle (1st Infantry Division)

a. Map Sheets:

(1) 1:50,000: L6330, L6332, L6528, L6530, L6532, L6726, L6728, L6730, and L6928.

(2) 1:100,000: C6330, C6334, C6726, and C6730.

(3) TFC 1:250,000: NM 32-9 Nürnberg.

b. From (PV471662) N along Hwy 466 to Europa Kanal (PV478760); N along Kanal to Hwy 505 (PA404238); SW along Hwy 505 to A3 N of the town of Hochstadt; S across Hochstadt to Hwy 470; SW along Hwy 470 to Neustadt; E along Hwy 8 to the intersection with the border of Nürnberg Class "E" airspace boundary; SW along the Nürnberg Class "E" airspace boundary to the intersection with Hwy 466 (PV316474); NE along Hwy 466 to (PV471662).

3. HFCA Griffin (421st Medical Battalion)

a. Map Sheets:

(1) 1:50,000: L5514, L5516, L5518, L5712, L5714, L5716, L5718, L5912, L5914, L5916, and L5918.

(2) 1:100,000: C5514, C5518, C5914, and C5918.

(3) TFC 1:250,000: NM 32-4 Köln, NM 32-5 Frankfurt am Main, NM 32-7 Saarbrücken, and NM 32-8 Mannheim.

b. From (MA590400) W along the Main and Rhine rivers to (MA096543); NE to (MA465616); E along Hwy 275 to intersection with A5; S along A5 to intersection with A66; SW along A66 to (MA596450); S to (MA590400).

4. HFCA Ironeagle (1st Armored Division)

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a. Map Sheets:

(1) 1:50,000: L5122, L5124, L5318, L5320, L5322, L5324, L5518, L5520, L5522, L5524, L5526, L5718, L5720, L5722, L5724, L5726, L5918, L5920, L6116, 6118, and 6120.

(2) 1:100,000: C5118, C5122, C5126, C5518, C5522, C5526, C5530, C5918, C5922, C5926, C5930, and C6318.

(3) TFC 1:250,000: NM 32-5 Frankfurt am Main, NM 32-6 Erfurt, and NM 32-8 Mannheim.

b. From Alsfeld (NB1922), intersection of A5 and Hwy 254; NE along A5 to intersection with Hwy 324 (NB413395); E to Deconfliction Zone Boundary (NB567431); S along Deconfliction Zone Boundary to (NB863752); S to (NA868654); W to (NA666651); W to (NA185573); S to (NA228119); W to (MA861110); S to Hwy 47 at (MA840038); W along Hwy 47 to intersection with A5; N along A5 to intersection with A6/A67; E along Hwy 26 to intersection with Hwy 45; N along Hwy 45 to intersection with A66; W along A66 to (MA900555); NW to intersection of A5 and A661 (MA748614); N/NW along A5 to Alsfeld.

5. HFCA Lifesaver (236th Med Co)

a. Map Sheets:

(1) 1:50,000: L6506, L6508, L6510, L6512, L6514, L6706, L6708, L6710, L6712, L6714, L6908, L6910, L6912, and L6914.

(2) 1:100,000: C6310, C6314, C6708, C6710, C6714, C7110, and C7114.

(3) TFC 1:250,000: NM 32-7 Saarbrücken, and NM 32-8 Mannheim.

b. From SW corner of the Ramstein control zone (LV859709), E then N along Ramstein control zone to the NE corner; NE to the intersection of HWY 40 and secondary road at (MV258945); SE to A6 at (MV289845); NE on A6 to intersection with Hwy 271; S along Hwy 271 to the town of Neustadt; S along Hwy 38 to the French border; W along the French border to (LV822483); N along Hwy 424 to intersection with A8; N along A8 to intersection with Hwy 423; N along Hwy 423 to intersection with Hwy 40; NW along Hwy 40 to SW boundary of Ramstein control zone (LV859709).

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6. HFCA Skyhawk (1st Armored Division)

a. Map Sheets:

(1) 1:50,000: L5914, L6110, L6112, L6114, L6116, L6308, L6310, L6312, L6314, L6316, L6508, L6510, L6512, and L6514.

(2) 1:100,000: C6306, C6310, C6314, C6318, C6706, C6710, C6714, C6718, C7106, C7110, C7114, and C7118.

(3) TFC 1:250,000: NM 32-4 Köln, NM 32-5 Frankfurt am Main, NM 32-7 Saarbrücken, and NM 32-8 Mannheim.

b. From (MA201355) W along secondary road out of the town of Bingen to intersection with power lines at (MA141339); S along power lines to (MA131190); W along southern boundary of Pferdsfeld control zone to (LA927177); SW along railroad track to (LA773068); SW then SE along EDR-116 boundary to (LV794863); SE to the NW corner of the Ramstein control zone; E along the northern boundary Ramstein control zone to the NE corner; NE to intersection of Hwy 40 and secondary road at (MV258945); SE to A6 (MV289845); NE along A6 to intersection with A61; N along A61 to (MA428059); E along secondary road to the town of Rheindurkheim; N along the Rhein river to (MA201355).

7. HFCA Talon North (11th Aviation Regiment)

a. Map Sheets:

(1) 1:50,000: L6130, L6132, L6134, L6136, L6328, L6330, L6332, L6334, L6526, L6528, and L6530.

(2) 1:100,000: C6330, C6334, C6338, C6726, C6730, C6734, C7126, and C7130.

(3) TFC 1:250,000: NM 32-6 Erfurt, and NM 32-9 Nürnberg.

b. From (PV044744) NE along Nürnberg Class E airspace boundary to intersection with Hwy 8 (PV192930); W along Hwy 8 to intersection with Hwy 470 at Nüestadt; NE along Hwy 470 to (PA300066); N across Hochstadt to intersection of A3 and Hwy 505; NE along Hwy 505 to the intersection with Europa-Kanal (PA429200); S along kanal to the intersection with the Nürnberg Class "E" airspace boundary (PA470144); E along the Nürnberg Class "E" airspace boundary to the intersection with A9 (PA780038); NE along A9 to the intersection with Hwy 85 SW of the

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town of Pegnitz; NE along Hwy 85 to Pegnitz; NW along the railroad track to (QA050324); NW to (PA995424); W to (PA370405); SW to the town of Trosdorf (PA298307); follow secondary road SW to Tutschengereuth; S to Walsdorf; S to Grasmannsdorf; S to Treppendorf; SW to Reichmannsdorf; W to Schlusselfeld; SE to Attelsdorf; S to Niederndorf; W to Rosenbirkach; follow road SW to Scheinfeld; SW to (PA030008); E to Bibart; S to Sugenheim; SW to Krautostheim; SW to Herbolzheim; SW to Uffenheim; SW along Hwy 25 to A7; S along A7 to Hwy 470; E along Hwy 470 to railroad track (NV924784); SW along railroad track to (PV044744).

8. HFCA Talon South (11th Aviation Regiment)

a. Map Sheets:

(1) 1:50,000: L6726, L6728, L6730, L6924, L6926, L6928, and L6930.

(2) 1:100,000: C6726, C6730, C7126, and C7130.

(3) TFC 1:250,000: NM 32-8 Mannheim, and NM 32-9 Nürnberg.

b. From (PV184290) W to (NV352277); NE along Hwy 14 to (NV410364); N then W approximately 2000 meters along a secondary road then NW along a secondary road to A6 at Oehringen; E along Autobahn A6 to it's intersection with A7; N along A7 to Hwy 470; E along Hwy 470 to railroad track at (NV016785); SW along railroad track to (PV044744); SW along Nürnberg Class "E" airspace boundary to intersection with Hwy 466 (PV316474); SW along Hwy 466 to Gunzenhausen and SW along railroad track to (PV184290).

9. HFCA Texas (12th Aviation Brigade)

a. Map Sheets:

(1) 1:50,000: L5722, L5724, L5726, L5728, L5730, L5922, L5924, L5926, L5928, L5930, L6122, L6124, L6126, L6128, L6130, L6322, L6324, L6326, L6328, L6330, L6522, L6524, L6526, L6528, L6530, L6722, L6724, L6726, L6728, and L6730.

(2) 1:100,000: C5922, C5926, C5930, C6322, C6326, C6330, C6722, C6726, and C6730.

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(3) TFC 1:250,000: NM 32-5 Frankfurt am Main, NM 32-6
Efurt, NM 32-8 Mannheim, and NM 32-9 Nürnberg.

b. From the intersection of A7 and Hwy 25 (NV867852) N on A7
to (NV852979); W to (NV620930); NW to (NA595035); NE to
(NA637178); NW along the Main river to (NA554346); NE to
(NA669373); N to (NA666651); E to (NA868654); S to (NA870524); SE
to (PA194401); E to (PA370405); SW to town of Trosdorf
(PA298307); follow secondary road SW to Tutschengereuth; S to
(PA030008); E to Bibart; S to Sugenheim; SW to Krautostheim; SW
to Herbolzheim; SW to Uffenheim; SW along Hwy 25 to intersection
with A7 (NV870852).

10. HFCA Victory (HQ, V Corps)

a. Map Sheets:

(1) 1:50,000: L5914, L5916, L5918, L6114, L6116, L6118,
L6314, L6316, L6318, L6514, L6516, L6518, L6714, L6716, L6718,
L6914, L6916, and L6918.

(2) 1:100,000: C5914, C5918, C6314, C6318, C6714, C6718,
C7114, and C7118.

(3) TFC 1:250,000: NM 32-4 Köln, NM 32-5 Frankfurt am
Main, NM 32-7 Saarbrücken, and NM 32-8 Mannheim.

b. From intersection of Hwy 38 and the French border
(MV237330); N along Hwy 38 to the town of Neustadt; N along Hwy
271 to intersection with A6; E along A6 to intersection with A61;
N along A61 to (MA428059); E along secondary road to the town of
Rheindürkheim; N along Rhein river to intersection with Main

river; E along Main river to (MA590400); N to (MA596450); NE
along A66 to intersection with A5; SE to (MA900555); E along A66
to intersection with Hwy 45; S along Hwy 45 to intersection with
Hwy 26; E along Hwy 26 to intersection with A5; S along A5 to
intersection with Hwy 47; E along Hwy 47 to (MA840038); S to
(MV864635); SW to (MV703410); SE along railroad to intersection
with Hwy 293; W along Hwy 293 to intersection with Hwy 10
(MV656282); W along Hwy 10 to railroad bridge at (MV588278); SW
along railroad to (MV474209); S along secondary road to the
French border at (MV414232); NE then NW along French border to
intersection with Hwy 38 at (MV237330).